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NOTES ON THE NEUROPTERA (S STR.) AND ODONATA OF GLEN
LYON, MID-PERTSHIRE, WITH SOME OTHER SCOTTISH
RECORDS

BY KENNETH J. MORTON, F.R.E.S.

From June 17th to July 30th last we resided at Cambusvrachan in Glen Lyon, about eight miles above Fortingal and rather under three from Bridge of Balgie. The lower part of this glen, just above Fortingal, where it is well wooded, was not unfamiliar to me, but my several visits there had been in May or early June and in September; no collecting was done in this part on the present occasion. The upper part was practically unknown to me, though I had driven through it once or twice as far as Bridge of Balgie without stopping.

Lying between Rannoch on the north and Loch Tay and Glen Lochay on the south, it is natural to expect that the insect fauna will be very similar in Glen Lyon, and the results of my own limited collecting, as far as they go, confirm this. Very much, however, must be done before it can be said that this glen is less or is more productive than the other two districts mentioned, which are better known. Perhaps the attractions of these have caused entomologists to lose sight of Glen Lyon. On account of its great length it is difficult to judge of its potentialities as a whole, and the past season can hardly be considered as providing in any way a fair test of its merits even with regard to the above restricted orders, the weather during most of our stay having been decidedly unfavourable for collecting.

Our situation at Cambusvrachan with its fine view of the north side of the Lawers range was not unsatisfactory. To the north the hills rise to altitudes of 2,700-3,300 feet and from these a large burn, Allt Bhrachain, comes down and enters the Lyon not far from the main road. Its lower course before it reaches the flatter ground near the river runs through a fairly deep gorge, the ground flanking this on both sides being planted with conifers, mainly

larch and spruce. This wood extends up the hillside to 300-400 feet above the river-level, the slope being steep. On the south side of the Lyon, reached by a convenient bridge near the house, two large burns about a mile apart enter the river, their courses being broken by pretty waterfalls; between these burns are considerable birch woods and some marshy pastures with much bog-myrtle through which one or two rivulets make their way, these being frequented by *Cordulegaster* and *Pyrrhosoma*, the only dragonflies seen in this neighbourhood. I believe the country about Bridge of Balgie would have afforded more varied and better conditions for general collecting: up there the woods are more extensive and include old pines generally regarded as of the indigenous stock. We did not see a great deal of this upper part of the glen and on the few times we were there, thanks to the kindness of friends, the weather was not always good. On the one occasion when we went as far as Loch Lyon, nothing could be done, heavy rain having set in before we got there.

The records that follow may be useful as adding a little to our knowledge of the distribution of the Neuroptera in Perthshire. As it may be convenient in future to adopt the distributional lists in Killington's Monograph of the British Neuroptera (1936-37) as a standard of reference up to the date of publication, I have marked with an asterisk the species which are not mentioned by him as occurring in the county. Some of these had been taken in the county years ago and they may have been found there even earlier by my late friend King, but neither of us systematically published all our captures. I take this opportunity of referring to some other Scottish captures; where these seem to be new county records they are also marked with an asterisk and are enclosed in square brackets when the localities are outside Perthshire.

The following twelve species of Hemerobiidae occurred in Glen Lyon; these included six not listed for Perthshire by Killington:—

* *Eumicromus paganus* Linne: One ♀, 18.vi. from a small birch; an elusive species rather than a rare one.

Hemerobius simulans Walker: One very old ♀, 19.vi., from coniferous woods about Meggernie; not seen again till 19.vii. when a teneral ♂ was taken at Cambusvrachan, where it became frequent in both coniferous and birch woods in the last week of July. It would appear to have two broods in Scotland as in the south, but my captures in May and June have been extremely few. In former years I found it abundant in September above Fortingal and also on Loch Tay side.

H. stigma Stephens: One mature ♀, 13.vii.; teneral ♂, 20.vii.

**H. atrifrons* McLach.: Very mature ♂, Meggernie woods, 10.vi.; not seen again till 16.vii., between which date and end of month a few fresh examples were taken from larch. [*Aberdeenshire, Lumphanan, 15-31.vii.1910.]

**H. pini* Stephens: One ♀, 22.vi.; another 19.vii. It is only possible to explain the scarcity of these three species, especially *stigma* (and the entire absence of the usually common *nitidulus*) by the suggestion that most of our time in the glen fell during the pause between broods.

H. micans Olivier and **H. lutescens* Fabr.: Both common in birch woods during our whole period.

H. marginatus Stephens: First teneral 26.vi. and abundant in birch woods throughout July. Preferred hazel to birch but quite common on birch in higher parts of the woods to which hazel did not extend. A few on oak, but this tree was rare where I usually collected.

Kimminsia nervosa Fabr.: One ♂ and a few females, 22.vi. to 30.vi. Not seen again till 11.vii., when freshly emerged examples appeared; thereafter the species was taken sparingly during the rest of the month.

**Wesmaelius concinnus* Stephens: Three females, 3, 27, 28.vii., two from larch (one of them from a small larch with pine branches overhead, the other from a perfectly isolated clump of pure larch) and one from pine. Favours pine, which was not very numerous in the Cambusrrachan wood and mostly difficult to get at. In the Meggernie woods the species is probably more common. Taken at Rannoch in July, 1903.

**W. quadrifasciatus* Reuter: Common and found in all the coniferous woods in which I collected, on larch and occasionally spruce, declining in numbers, especially the males in the latter half of July; both sexes, however, occurred in the high part of Cambusrrachan wood on 27.vii. Also at Rannoch in July, 1903. [*Aberdeenshire: Lumphanan, 15-31.vii.1910.] It is safe to assert that this species will be found to occur in the Highlands wherever larch has been extensively planted for many years.

Symphorobius inconspicuus McLach.: One ♀, 19.vii. A pine species and its scarcity here is probably due to the difficulty mentioned under *W. concinnus*.

Six species of Hemerobiidae known to occur in Perthshire were not taken in Glen Lyon. These are:—

H. humulinus Linne: This should occur in the lower part of

the glen; if present higher up it may have been over, as I have usually found the species most common elsewhere in Scotland in May and early June, although it also appears later in summer.

H. perelegans Stephens: Occurs at Rannoch, but appears to be local and in my experience of it mainly an early species (May and June).

H. nitidulus: The absence of this pine species has been referred to.

K. mortonii McLach.: First taken at Rannoch in June; the old pines in upper Glen Lyon should hold it.

K. subnebulosa Stephens: Well known as an urban and suburban species which seems to be less frequent in more natural surroundings.

Drepanepteryx phalaenoides Linne was taken at Pitlochry (August 20th, 1892) by Beaumont (E.M.M., XXIX, p. 263, 1893) and no other record for the county is known to me. It is not quite certain whether it came from the east or west side of the Tummel (i.e. from Perth-North or Perth-Mid) but that does not greatly matter. The lower part of Glen Lyon would suit it admirably, and happy is the man who shall find it.

Of *Chrysopa* only two examples were seen, one of them being taken. No doubt the lower part of the glen is more suitable for these insects.

**C. vittata* Wesmael: One ♂, 19.vii., from birch. Also from Rannoch, 15.vii.1903.

C. ciliata Wesmael: One ♂, Fortingal, 17.ix.1921.

The only Scottish species of the Sisyridae, the widely distributed *Sisyra fuscata* Fabr., was not taken in Glen Lyon, nor is it listed from Perthshire. Curiously enough the only Perthshire locality in which I have found it myself is Aberfoyle, 14.vii.1906, in the south-west corner of the county (V.C., S.W. Perth with Clackmannan). I find in the late Mr. William Evans' MS. list of Neuroptera of the Forth area, he gives *Midlothian and *S.W. Perth, both new county records for *fuscata*. The latter locality is Lake of Menteth, 28.vi.1901, in the same district as Aberfoyle. I can also confirm the Midlothian record.

Coniopterygidae. These insects were common around Cambusvrachan to the end of June, gradually thinning to the end of July. Birch was the most productive tree, then conifers, a small lot being found on *Salix*. All proved to belong to the genus *Coniopteryx*. Out of forty-three examples brought home (a good many females having been discarded on the spot after cursory

examination) only eight males, all taken in June, are included: seven **tineiformis* Curt. and one *borealis* Tjeder, the last providing a second Perthshire locality for this still little-known species, of which the first British example was found at Rannoch in 1903. Such females as I set apart and noted as from pine or larch are certainly *C. pygmaea* Enderlein, and probably most, if not all, of the females from conifers belong to the same species. The other females have not been fully determined, those of *tineiformis* and *borealis* being rather difficult to separate. It will be seen that Killington was unable to list the widespread *C. tineiformis* from Perthshire. I am not sure that the name ever actually appeared in any old Perth records but, in any event, after Tjeder's revision of the North European species of the genus (Arkiv f. Zool., Bd. 23A, No. 10, 1931) all previous records needed confirmation. Two more species of the family have been recorded from Rannoch. King in E.M.M., XXXV, p. 82 (1899), says: '*Coniopteryx psociformis* Curt. and *aleyrodiiformis* Steph., both species fairly common on the firs.' As to the former there is no room for question; of the latter I have not yet seen Scottish examples. These small species were so imperfectly understood forty years ago that confirmation of *Semidalis aleyrodiiformis* is desirable. The two species that I took at Rannoch in 1903 have been determined as *C. pygmaea* and, as indicated above, *C. borealis*.

[Before going to Glen Lyon, I had given a good deal of attention to *Coniopteryx* at Roslin, Midlothian. The first two examples, somewhat teneral, taken May 26th, were followed on June 7th and 11th by larger series, making sixty in all. The majority were from oak, only a few from birch, conifers and *Salix*. Conifers received little notice. The males taken, slightly in excess of the females in number, prove to be twenty-four *tineiformis*, nine *borealis* (which occurred on all of the three dates mentioned) and one **pygmaea* Enderlein. The last is a new record, I believe, for Midlothian, but on looking over a few unlabelled slides another ♂ was discovered also from Roslin taken in June, 1934, when I first found *borealis* there. It is interesting to find the three British species together in the same area here as well as in Glen Lyon. As far as I know, *C. borealis* has not yet been detected in any other localities than those in Midlothian and Perthshire. My captures of it this season show that it is not quite a rarity. It would be worth while to give these small species more attention; there is always the possibility that the two other northern species described by Tjeder may also be with us.

Before leaving this subject a few words may be added on the occurrence of specimens of *Coniopteryx* with *Semidalis*-like venation. Tjeder (l.c., p. 2) mentions two examples, ♂ ♀, of *C. pygmaea* from Sweden, more or less in this condition. Killington (Mon., p. 195) says he has never met with such specimens himself and that the condition must be extremely rare. It may therefore be worth recording that on August 21st, 1936, a rather late date, a female was found in Roslin Glen in which the hind wings are two-forked. *Semidalis* was naturally suggested, and it would have pleased me if the insect had proved to be *S. aleyrodiformis*, which I have not yet found in the locality. But examination of the venation as a whole led me to conclude that the specimen was after all a *Coniopteryx*, and it was labelled so. However, to put the matter beyond question, I have now prepared the abdomen in the usual way. It is a *Coniopteryx* certainly, and I believe *C. tineiformis*.]

About Odonata there is not very much to say. One could always count on seeing *Cordulegaster annulatus* and *Pyrrosoma nymphula* near Cambusvrachan if there was any continuous sunshine and the wind not too strong and cold, but neither species was numerous. Although constantly on the watch there for *Aeschna coerulea* I never saw it. On June 19th Miss Ethel Evans, who was spending a holiday near Killin, kindly motored us a good many miles in the direction of Loch Lyon, and we walked over a good deal of ground, partly boggy, without seeing any dragonfly life. On the way down in the afternoon it was rather warmer, and we stopped for a time by the sheltered roadside in the woods above Meggernie, where one or two dragonflies were noticed. There I got to close quarters with *Ae. coerulea* but failed to secure it. On the 21st we tried the lower part of the hill road which passes from Bridge of Balgie over to Loch Tay side. It was rather brighter and warmer but throughout the forenoon we only met with a number of *P. nymphula*. In the afternoon on a path running westward not far from the river, during a brief period of sunshine a ♀ of *coerulea* settled near us on a fence. It evaded me but did not go far, settling at once on another post from which Miss Evans took it. It was almost a foregone conclusion that *coerulea* would be found in Glen Lyon; it was good to have proof. I think it must stray but rarely east of Bridge of Balgie.

The only other Glen Lyon dragonflies that I need mention were taken near the Bridge of Balgie: a teneral ♀ *Aeschna juncea*, 17.vii.; *Cordulegaster annulatus*, a fine ♀, 25.vii.; and a ♀ *Sympetrum scoticum*, 28.vii. I had tried to interest in dragonflies a

youth, son of one of the keepers, but on account of continuous sunless, cool and frequently wet weather he could not do much. These three specimens were the result. With a better season, and when its western part shall have been fully explored, it is not too much to expect that the dragonfly list of this glen will eventually equal that of Rannoch.

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September 30th, 1937.

P.S.—I am much indebted to Mr. R. S. Brown, Glasgow, who since the above was written has kindly examined the Coniopterygidae in the late Mr. King's collection now in the University Museum there. He found the series of '*Coniopteryx aleyrodiformis*' to consist of nine from Lyndhurst, one from Epping Forest and five from Strathglass (cf. E.M.M., Vol. XIX, p. 11, 1882), the Southern examples being *Semidalis* but the Scottish ones *Coniopteryx*. By the courtesy of Dr. Staig I have seen this series and agree with Mr. Brown's determination. The *Coniopteryx* is probably *tineiformis* (recorded by King as common in Strathglass) but the specimens would require further preparation for safe identification. Rannoch examples reported by King (see above) as '*aleyrodiformis*' cannot be traced in the collection, and it looks as if *Semidalis aleyrodiformis* must for the present be expunged from the Scottish list.—K.J.M.

NYSIUS (ORTHOLOMUS) PUNCTIPENNIS H.-S., A BRITISH SPECIES.

BY W. E. CHINA, M.A.

While collecting at Tuddenham Heath, near Mildenhall in Suffolk, on the 6th and 8th August, 1937, Mr. Philip Harwood captured several specimens which he at once recognised as representing a species of *Nysius* new to Britain. A pair of these specimens was sent to me for determination and proved to be *Nysius (Ortholomus) punctipennis* H.-S., a well-known Continental species. The following brief description will enable collectors to identify it.

Greyish-brown, densely fusco-punctate on head, pronotum and scutellum. The hemelytra opaque-greyish with the veins and apical margin of corium rich dark brown; area between veins speckled with shallow brownish punctures; membrane opaque-whitish with outer basal cell and some stripes between longitudinal veins brown. Antennae dark brown, the basal segment black and apical segment slightly ferruginous; rostrum dark brown. Legs yellow, the femora densely spotted with black except at apices, the punctures coalescing above so that seen from above the middle and hind femora are largely black;

bases and apices of tibiae and tarsi dark brown. The whole insect covered with a more or less dense greyish pubescence.

Length 4.5 mm.

This species is separated subgenerically from *Nysius* (sens strict.) by having the costal margin of the corium straight throughout its length (instead of straight at base and thence more or less convex), and by the membrane not extending beyond apex of abdomen. The eyes are large and prominent, and extend almost to the width of posterior margin of pronotum. The lateral margins of head more or less straight between insertion of antennae and apex of clypeus, not at all concave. Saunders' key to the British species of *Nysius* may now be modified as follows :—

- (2) 1. Costal margin of hemielytra convex; scutellum without a pallid central keel towards apex *thymi* Wolff.
- (1) 2. Costal margin of hemielytra more or less straight; scutellum with a pallid central keel at least towards apex 3.
- (4) 3. Distinctly pubescent, hemielytra opaque, membrane whitish; central keel of scutellum apical, very short *punctipennis* H.-S.
- (3) 4. Pubescence obscure, hemielytra translucent, membrane hyaline, central keel of scutellum extending down apical two-thirds .. *lineatus* Costa.

Abroad *Nysius* (*Ortholomus*) *punctipennis* H.-S. occurs in Sweden, Germany, Holland, Belgium, Spain, Italy, Hungary, Jugo-Slavia, Rumania, Greece, Russia, Caucasus, Turkestan and Siberia. It is recorded from dry places under plants such as *Sedum*, *Thymus*, *Artemisia*, *Potentilla*, *Erica*, *Trifolium*, *Calamintha* and *Juniperus*.

Mr. Harwood's specimens were taken running about on the dry sand amongst extremely sparse vegetation including *Sedum acre*, and in company with *Nysius thymi* Wolff.

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November 9th, 1937.

OBSERVATIONS ON THE BRITISH PSYLLIDAE. II. NOTES ON THE *SALIX*-FEEDING PSYLLIDAE.

BY GEORGE HESLOP HARRISON, B.SC., PH.D.

Lal (1934) has already given a list of the twenty-one species of the genera *Psylla*, *Trioza* and *Ceropsylla** known to be attached to members of the Salicaceae for their food-plants. Of these, excluding the *Psylla salicicola* of Edwards (1896), nine are to be found in the British Isles. These are *Psylla ambigua* Först., *P. abdominalis* M.-D., *P. klapaleki* Sulc, *P. dudai* Sulc., *P. nigrita* Zett., *P. brunneipennis* Edw., *Trioza maura* Först., *T. salicivora*

* *Ceropsylla* is a non-British genus and need not be considered here.— G.H.H

Reut. and *T. albiventris* Först. The identity of the species regarded by Edwards as *P. salicicola* Först. is still not clear, but I believe that when his examples can be studied they will prove to be none other than *P. saliceti* Först. Until that is done, however, I prefer to disregard it. It will be noticed, too, that I include both *P. dudai* and *P. klapaleki* Sulc in the above list. Both of these I regarded when my 1936 paper was written to be new to the British list. Since then, however, I have found an Oxford record for *P. klapaleki* published by Mr. H. Britten in 1926.

Most of the Psyllids of the genera *Psylla* and *Trioza* attached to *Salix* utilise several species as food-plants. The extent to which this is carried out is surprising, and not always determinable from the literature. A good example of this may be taken from that very common species, *Psylla ambigua* Först. In Co. Durham it has been collected, both as adults and larvae, from the following nine species of *Salix*: *S. alba*, *S. fragilis*, *S. purpurea*, *S. viminalis*, *S. Andersoniana*, *S. aurita*, *S. Caprea*, and *S. cinerea*. In addition, several hybrids involving these species have also been found to serve as hosts.

It is therefore no less true that in many cases one host species is capable of supporting several different Psyllid forms. Thus *Salix Caprea* acts as host to no fewer than seven representatives of *Psylla* and *Trioza*. These are *P. ambigua* Först., *P. dudai* Sulc, *P. klapaleki* Sulc, *P. abdominalis* M.-D., *P. nigrita* Zett., *P. saliceti* Först. (= *P. salicicola* Först.?), *P. elegantula* Zett., *Trioza salicivora* Reut., and *T. striola* Flor. Of these, however, *P. elegantula* and *T. striola* are not yet known to be British.

According to Lal, *Salix Caprea* also serves as host to *Psylla ulmi* Först., but so far as I am able to determine the latter author is merely perpetuating an error made by Sulc (1905), and subsequently copied, without investigation, by several workers. I feel safe in expressing an opinion on this point since, as a whole, the species of the genus *Psylla* are very narrow in their choice of hosts; only in exceptional cases do they favour genera belonging to two or more widely separated natural orders. *Salix* and *Ulmus* are two such genera, and the latter, in the form of *Ulmus effusa* and *U. campestris*, has been satisfactorily shown by Löw (1884) to support *P. ulmi*.

The results of my own experiments set up for the purpose have shown that some of the common local species, e.g. *Psylla ambigua*, *P. brunneipennis*, *P. nigrita*, and *Trioza albiventris*, will, as the adults, accept almost any species of *Salix* proffered for egg-laying.

On the other hand, some species, e.g. *P. abdominalis*, reject just as definitely certain *Salix* groups. In this respect, *Psylla ambigua*, as was to be anticipated from the conditions in nature, was unique in depositing its eggs on every *Salix* form offered, including some very unusual species. This peculiarity no doubt arises from the fact that it lays its eggs on fully expanded leaves in June and July. *P. brunneipennis* was nearly as general in its capacity to lay on many species of *Salix* in captivity, but it refused to lay on such species as *Salix repens* and *S. triandra*. In the field, so far as this area is concerned, it limits its attentions almost entirely to *S. rubra*, *S. aurita* and *S. fragilis*.

P. nigrita has become adapted to laying its eggs in the down of the young catkins in spring, and cannot be forced to lay in any other situation. This naturally prevents it from choosing those species which are late in flowering, or which do not possess silky catkins. For these reasons it favours *S. Caprea*, *S. cinerea* and *S. aurita*, and neglects *S. alba*, *S. fragilis*, and their allies.

P. brunneipennis, on the other hand, although it is also able to lay its eggs within the down of the young catkins in a similar manner to *P. nigrita*, manifests a decided preference for the young unfolding leaves and scale-leaves at the base of the catkins.

P. abdominalis, in this area, is only found on *Salix fragilis*.

Trioza albiventris has a far wider range of host-plants than was at first supposed, for in captivity it was able to lay eggs on *Salix alba*, *S. fragilis*, *S. aurita*, *S. rubra* and *S. viminalis*; moreover, the larvae hatching from these eggs were successfully reared to the adult stage on the plants named. Normally *T. albiventris*, when the choice is not limited, chooses *S. alba* and *S. fragilis*. I also suspect that birch may sometimes supply the host. This opinion seems to have been shared by Scott, who in 1876 gave birch as the host.

On the Continent, *Psylla parvipennis* Löw is reported by H. Haupt (1935) from *Salix repens*. This insect is not a British one, but the host-plant, *Salix repens*, is quite common on our sea coasts and upland moors. Although there are no previous records of any Psyllids having been captured on that plant in this country, I can report that *Trioza albiventris* and *Psylla dudai* may on occasion utilise it as a food-plant. Adult females of *Trioza albiventris* were collected as they oviposited on the unfolding leaves of this plant on the Culbin Sands in 1934, whilst last year a strong *Salix repens* colony of *Psylla dudai* was detected on the sand dunes of the Ross Links, Northumberland.

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November 17th, 1937.

POMPILUS QUINQUEFASCIATUS SP. NOV. FROM RANCHI,
BEHAR, INDIA.

BY W. B. R. LAIDLAW, D.SC.

I took this Pompilid in the summer of 1928 on, I think, flower of *Acacia catechu*, along with other Aculeates. In relation to other members of the genus, it falls into the *Pompilus* group, the second ventral abdominal segment being without a transverse furrow, and the anterior tibiae being ciliate; as contrasted with the *Pompilus* group *Ferreola* section, which bears a transverse furrow on the second ventral abdominal segment, in common with *Paragenia*, *Pseudagenia* and *Salius* (Bingham, 1897, Faun. Brit. Ind. Hymenoptera, Vol. I, pp. 102-103).

According to Bingham's key to *Pompilus*, *P. limbatus* belongs to the group having the wings fusco-hyaline. In this species the wings are clear, apart from the fuscous band, though in certain lights they assume an opalescent appearance.

Bingham's key for *Pompilus* is as follows:—

- A. Wings more or less hyaline spp.
- B. Wings flavo-hyaline spp.
- C. Wings fusco-hyaline.
 - a. Thorax black spp.
 - a' Abdomen black, with silvery pile *P. ariadne*.
 - b' Abdomen red and black spp.
 - c' Abdomen black with bands of grey pile.
 - a Posterior tibia with white spot at base above *P. leucophaeus*.
 - b Posterior tibia without any white spot *P. limbatus*.

To include *P. quinquefasciatus*, the key should now read as follows:—

- b. Posterior tibiae without any white spot.
 - (i) Larger: bands of silvery pile on abdominal segments 2 and 3
..... *P. limbatus*.

- (ii) Smaller: bands of silvery pile on abdominal segments 1 to 5
 *P. quinquefasciatus*.

P. quinquefasciatus differs from *P. limbatus* in the following respects:—

The wings are practically clear, apart from the fuscous margin. The calcaria of the intermediate and posterior tarsi are only half as long as the metatarsi, and the middle line of the median segment is clearly impressed.



FIG. 1. *P. quinquefasciatus* ($\times 5$).

FIG. 2. *P. quinquefasciatus*, face ($\times 5$).

There are no yellow markings on the head or thorax, the antennae are pitchy beneath: the pilose bands and marks on the pronotum and mesonotum are white. The base of the first abdominal segment and the apices of the first five have broad bands of silvery pile. *P. limbatus* ♂ measures length 16: exp. 30 mm. The present species measures length 9: exp. 14 mm.

The following description is based on that of Bingham for *P. limbatus*:—

Pompilus quinquefasciatus sp. nov. ♀.

Description : Head, thorax and abdomen smooth, pruinose; clypeus sub-convex, anterior margin truncate; pronotum, posterior margin arched; median segment with a steep slope, rounded and bearing a definite impressed line down its middle; legs long, tibiae and tarsi spinose, calcaria of the intermediate and posterior tarsi half as long as metatarsus; abdomen sub-petiolate.

Head, thorax and abdomen blue-black; antennae pitchy below; entirely below; on front and hind margins of pronotum above; on face in front; on sides of thorax; coxae, trochanters and femora; broadly at base of abdominal segment 1, and broad bands at apex of segments 1 to 5, covered with a thin sericeous silvery pile; wings hyaline, forewings with a broad fuscous apical band. The pile is densest, whitest and coarsest on thoracic bands and marks, and on abdominal bands.

Hab. : Ranchi, Behar and Orissa, India. Holotype ♀, unique. Reg. No. 1937 : 64 deposited in Royal Scottish Museum, Edinburgh. Length 9 : exp. 14 mm.

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 October 22nd, 1937.

A PLEA FOR BETTER CITATION OF SYNONYMY.

BY W. D. HINCKS, M.P.S., F.R.E.S.

The establishment of a correct synonymy for any species is surely an important part of the systematist's work, and if it is to have any value for future workers it must of necessity be recorded clearly and without ambiguity. A glance through a number of modern taxonomic papers which include work of this kind will readily indicate the entire lack of uniformity in the manner in which new synonymy is cited. All too often the offending name is merely placed under that of the valid species without any further details. Such questions as why the step is taken, whether based on the comparison of types or descriptions, or mere guesswork, are left unanswered. Indeed in such cases there is nothing to show that any new synonymy has been established, so that the details do not find a place in that incomparable boon to systematists, the Zoological Record. Further, any future worker utilising such a paper will feel compelled to start *de novo* and may waste much valuable time in confirming or otherwise work already done.

There are many other 'methods' of introducing new synonyms which will occur to readers from their own experience. One of the worst is that seen in the 'chatty' type of paper where it is impossible to say whether the synonymy is new or even if the author

really intends to make any. There are so many phrases like 'very close to,' 'hardly distinct from,' 'differs only by,' 'probably not distinct from,' etc., in this class of contribution that our ideas become very confused after reading it.

May I suggest that the following points, if generally followed, would considerably improve our present methods of synonymic work and would enable the compilers of the Zoological Record to include more details in their pages.

- (1) Every new synonym established should be indicated by some suitable abbreviation such as (n.syn.) at the end of the reference and in bold-faced type.
- (2) That reasons for the synonymy and the means by which it is established be indicated.
- (3) The citation of the full reference to the valid species and the new synonyms together with type localities. The references may be reduced to author's name, year and page if a separate bibliography is given.
- (4) It would be useful in the case of papers more than a few pages in length to give a brief summary indicating the new work included and listing the new synonymy established.
- (5) A useful refinement would be the addition of a brief note indicative of the scope of each reference where these are quoted, e.g. (orig. descr.), (distribution), (new to Belgian Congo), etc.

46 Gipton Wood Avenue, Leeds 8.

December 12th, 1937.

THE HIPPOBOSCIDAE (DIPTERA) RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

In this paper I have endeavoured to bring together all the references to Hippoboscidae recorded from the Pacific Islands. It appears that fifteen species of this interesting family of Diptera, the members of which are all parasitic on birds or mammals, have been recorded from this region. Of the fifteen species definitely recorded by name three at least have been introduced by man, i.e. *Hippobosca equina* Linn., *Melophagus ovinus* (Linn.) and *Pseudolynchia maura* (Bigot). These three species are parasites respectively of the horse, sheep and pigeon. Six species occur on or around most of the islands and have also been recorded from localities outside the area under consideration. The species parasitic on tropical marine birds may be expected to occur around any of the islands from which they have not yet been recorded. *Lynchia nigra* (Perty) has so far only been recorded from the Galapagos Is. and the Hawaiian Is. Three species have only been recorded thus far from the Galapagos Is. and a single species, *Lynchia samoana* Ferris, is at present only known from Samoa.

The species *Ornithoica stipituri* (Schiner) originally described from Australia, New South Wales, has been recorded from New Britain. The apparent endemism of these species must for the present, however, be regarded as doubtful.

In drawing up this list I have adopted the following plan. Under the heading of the species I have listed the reference to the original description, then all the references to definite synonyms as recognised at present, together with references in the literature to descriptions and figures which would aid in the identification of the species. In the notes given below each species I have analysed all the records, giving within brackets after the authors' names the complete references to the records.

All the abbreviations to the periodicals are, wherever possible, according to the 'World List of Scientific Periodicals' (1934). All the host-names have been checked according to G. M. Mathews' 'Systema Avium Australasianarum,' Parts 1 and 2, London, 1927 and 1930. In the event of my interpretation of some of the host-names proving to be incorrect I have given within brackets, immediately after the corrected host-name, the original name of the host as given by the author.

At the end of the paper I have given two tables. The first table contains a host-parasite list abstracted from the numerous records given in the paper. I have omitted from this table any doubtful records. The second consists of an analysis of the records in order to show from which islands the various species of Hippoboscidae have been recorded.

In conclusion, I should like to express my thanks to Dr. Jos. Bequaert for having kindly looked over my notes and for supplying me with some references which I had previously overlooked.

HIPPOBOSCIDAE.

Subfamily HIPPOBOSCINAE.

1. *Hippobosca equina* Linn.

Hippobosca equina Linn., 1758, Systema Naturae, I, p. 607.

Hippobosca equina Linn., Schuurmans Stekhoven, 1926, Parasitology, XVIII, pp. 35-50, f. 11, 9 & 10; Pl. IV, 3 & 4.

Hippobosca equina Linn., Ferris, 1930, Philipp. J. Sci., XLIII, pp. 539-544, f. 1; 2, a; 3; 4, a, b, d-h.

Hippobosca equina Linn., Bequaert, 1930, Psyche. Camb., Mass., XXXVII, pp. 310-312.

Austen (1903, Ann. Mag. nat. Hist., (7), XII, p. 256) recorded this species from New Caledonia, Noumea. In 1906, Austen (Illus-

trations of British Blood-Sucking Flies, London, p. 64) recorded it from Fiji Is. and New Caledonia. Bryan (1924, Proc. Hawaii ent. Soc., V, pp. 346-347) recorded the species from New Hebrides, Tanna Is. Buxton (1927, Researches in Polynesia and Melanesia, London, p. 56) stated that it had not been introduced into any of the Polynesian Is., which he visited, but he saw it in great numbers in New Caledonia. It was also common in the New Hebrides, Vila, and he learned there that it had only been introduced a few years previously. Curran (1929, Amer. Mus. Novit., No. 375, p. 15) recorded the species as *Hippobosca* sp. from New Caledonia. Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, p. 43) also recorded this species from New Caledonia. According to Bequaert (1930, loc. cit.) this species was introduced into New Caledonia about 1890. It is the common parasite of equines.

Subfamily MELOPHAGINAE.

2. *Melophagus ovinus* (Linn.).

Hippobosca ovina Linn., 1758, Systema Naturae, I, p. 607.

Melophagus ovinus (Linn.), Ferris & Cole, 1922, Parasitology, XIV, p. 192, f. 8, 9 A, B, C, D.

Recorded from Hawaii by Muir (1928, Proc. Hawaii ent. Soc., VII, pp. 4-5) for the first time and later by Swezey and Williams (1932, op. cit., VIII, p. 188). Bryan (1934, op. cit., VIII, p. 458) includes it in his list of the Hippoboscidae recorded from the Hawaiian Is. Apparently it has not been recorded from any other of the Pacific islands. It is a common and world-wide parasite of sheep.

Subfamily ORNITHOMYINAE.

3. *Ornithoetona plicata* (v. Olfers).

Ornithomyia plicata v. Olfers, 1816, De vegetativis et animatis corporibus in corporibus animatis reperiundis commentarius, Berlin, Pt. I, p. 102.

? *Hippobosca australasiae* Fabricius, 1805, Syst. Antliat, p. 337.

Ornithomyia nigricans Leach, 1818, Mem. Wern. nat. Hist. Soc., II, p. 558, Pl. XXVII, f. 7-10.

Hippobosca sitiens Boisduval, 1835, Voyage de l'Astrolabe, Faune ent. de l'Océan Pacifique, II, p. 667, Pl. 12, f. 16.

Ornithomyia kanakorum Bigot, 1885, Ann. Soc. ent. Fr., (6), V, p. 244.

Ornithoetona nigricans (Leach), Speiser, 1904, Ann. Mus. Stor. nat. Genova, XLI, pp. 338-343.

? *Ornithoctona vitrina* Speiser, 1904, Ann. Mus. Stor. nat. Genova, XLI, pp. 343-344.

Ornithoctona nigricans (Leach), Ferris, 1927, Insects of Samoa, Pt. VI, fasc. 1, pp. 20-21.

Ornithoctona nigricans (Leach), Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 215-218, f. 7, 8.

Hippobosca australasiae Fabricius is probably the same as *O. plicata* (v. Olfers) (Dr. J. Bequaert, *in litt.*). In the original description Fabricius says 'in insulis Oceani Pacifici.' *Hippobosca sitiens* Boisduval was described from Fiji Is., Vanikoro.* Bigot's *O. kanakorum* was described from New Caledonia. Speiser (1904) described his species *O. vitrina*, which is in all probability a synonym of *O. plicata* (v. Olfers), from Tonga Arch., Wawao I. Ferris (1929) recorded this species from Samoa, Upolu, Vailima, off *Ptilinopus perousii perousii* Peale (*Ptilopus perousii*) and from Samoa, Malololelei, off an undetermined host. Ferris (1927) recorded it from New Hebrides, Tanna, off *Circus juxta wolffi* Gurney (*Circus wolffi*). Bau (1929, Zool. Anz., LXXXV, p. 11) recorded *Ornithoctona plicata* (v. Olfers) from Fiji Is., Viti; and *Ornithoctona australasiae* (Fabricius) from Duke of York I., Caroline Is., Ponape I., and Samoa, off *Didunculus strigirostris* Jardine. Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, pp. 34-35) recorded the species from New Caledonia.

Bau (1929, Zool. Anz., LXXXV, p. 11) recorded *Ornithoctona haitiensis* (Bigot), regarded as a synonym of *O. erythrocephala* (Leach) by Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, p. 39) from New Caledonia, without indication of host. Bequaert (1933, Rev. chil. Hist. nat., XXXVII, p. 163) regards *O. haitiensis* (Bigot) as a distinct species. This record is certainly based on some error either of identification or of labelling (Dr. Bequaert *in litt.*).

(To be continued.)

Mayflies: A consideration of Anglers' and Entomologists' Claims to a Popular Name.—An entertaining article by Martin E. Moseley appears under the above title in the 'Salmon and Trout Magazine,' No. 88, September, 1937, a locale in which it is perhaps born to blush unseen by any but the 'right-minded' (i.e. fisherman) entomologist.

Mr. Mosely's own summary of his complaint is that 'we anglers would therefore seem to have a legitimate grievance. The name of our crowning glory has been basely filched from us.'

After a survey of some of the earliest works both on angling and on ento-

* It is possible that this refers to the island of that name in the Santa Cruz Islands. There is no indication in the original work.

mology Mr. Mosely finds the first mention of the Mayfly in 'The Pleasures of Princes' by Gervase Markham (1614), where it is mentioned in conjunction with 'the Stonefly (which some call the Mayfly).' From which it is at least evident that at that time there was no generally accepted application of the term. This conclusion is only confirmed by other extracts from early treatises on angling quoted by Mr. Mosely, and this lack of agreement persists, I understand, even to the present day, for, so Mr. Mosely informs me, while the fisherman in the south of England applies the term fairly generally to one of the genus *Ephemera*, yet in the north of England it is the Stone-fly that is still so designated. Thus it would seem that at best the angler has but a poor claim to the use of the term as his particular property.

He then proceeds to examine the entomologist's claim to the name as applied to the entire Order of the Ephemeroptera.

The first intelligible account of an Ephemeropteran in entomological literature he considers to be that of Swammerdam (1675), entitled '*Ephemeræ Vita*,' of which an English translation by Dr. Tyson appeared in 1681. In a preface Dr. Tyson remarks: 'I doubt not but upon a strict enquiry we may meet with Ephemerons here in England . . . our Mayfly may well deserve to be examined.' From this Mr. Mosely concludes that Dr. Tyson must have been a fisherman, and that the Ephemeroptera as such were unknown to entomologists in England at that date, the name Mayfly being the exclusive property of the angler. But is he serious? At that date there was of course no classification of the insects. The ordinal name Ephemeroptera appears to have originated with Shipley (1904), though Brauer (1885) had raised the family Ephemeridae of the Neuroptera to ordinal rank. But the association of species, whether an Order, or a family of the Neuroptera, or the genus *Ephemera* of Linnaeus, remains the same, an association recognised by the entomologist though even yet the angler has no more comprehensive appellation for them than the 'duns' and 'spinners,' 'drakes' and so forth. A sounder inference from Dr. Tyson's remark would seem to be that, whether a fisherman or not, he was at any rate sufficient of a naturalist to recognise the affinity between the English Mayfly (presumably *Ephemera*) and *Palingenia*, the Ephemeron of the Dutch entomologist.

Finally Mr. Mosely concludes that not until Eaton's 'Revisional Monograph of the Recent Ephemeridae or Mayflies' (1882) was the term 'mayfly' definitely associated with the Ephemeridae as a whole, apparently charging him with the theft of it from the fisherman, who, however, as we have seen, had no very definite claim to it at all.

As he shows, most of the early entomological writers seem to have been as vague in the application of the term as the anglers. Even Kirby and Spence (1816) did not attach it definitely to the Ephemeridae, but indeed seem to have made a deliberate and original attempt to attach it to *Sialis*, an attempt, happily abortive, that seems to come nearer to Mr. Mosely's charge of 'filching' the term than any other incident in its history. Curiously enough, however, he appears to have completely overlooked some of the greatest entomologists of the early part of the last century: e.g. Stephens, 'Systematic Catalogue' (1829), who refers to the 'Ephemeridae (Mayflies or Dayflies)'; J. Rennie, *Insect Architecture* (1830), p. 205, 'The grubs of several of the numerous species of Mayfly (*Ephemera*)'; Curtis, *Brit. Ent.*, 1838, No. 708, 'The Ephemeræ are the true Mayflies of anglers'; also Westwood, *Introduction to the Modern Classification of Insects*, II, 1840, p. 24, says quite definitely 'The

family Ephemeridae Leach comprise the well-known tribe of insects ordinarily known under the name of Mayflies.'

Thus Mr. Mosely's charge against Eaton is seen to be absolutely baseless; the term was in general use among entomologists at least half a century before that, and probably long earlier, having no doubt been extended from the particular to the general, from 'the Mayfly,' *Ephemera*, to the whole of the natural group of which it was the best known member, 'the Mayflies,' with the gradual popularising of the idea of classification first put on a workable basis by Linnaeus.—K. G. BLAIR, Dept. of Entomology, British Museum (Nat. Hist.), London, S.W.7: October 20th, 1937.

A note on Oxyptoda lurida Woll.—In connection with my friend Dr. Cameron's note (Ent. Mo. Mag., LXXIII, p. 280) on *Oxyptoda lurida* Woll., etc., it may be as well to point out that figures of the head, thorax, antennae, and palpi of *O. lurida* Woll., *O. exoleta* Er., *O. verecunda* Sharp, and *O. salictaria* Donis. will be found in the Ent. Mo. Mag., 68, 4—8, Pl. I, figs. 1—4 (1932), and where the whole subject was discussed by me. These figures were all drawn from the actual types, as, with the exception of *exoleta*, they are all in the Museum. The type of that species was kindly lent me by Dr. Horn. *O. exoleta* Er. and *O. verecunda* Sharp may be the sexes of the same species, but they look quite different, as the above-mentioned figures will show.—HORACE DONISTHORPE, British Museum (Natural History): December 9th, 1937.

Coleoptera in Dumfriesshire.—The year now drawing to its close has been a poor one for insects generally in this country. However, I met with the following Coleoptera, although in some cases not for the first time. *Nebria brevicollis* Fab., at tree roots, etc., common. *N. gyllenhali* Schonh., banks of R. Kirtle, somewhat scarce. *Bradycellus verbasci* Duft., rare, one swept in a wet place in September. *Calathus piceus* Msh., several under old sacking on a sandy bank in May. *Bembidion lunatum* Duft., several under large stones at the mouth of the R. Kirtle. *B. saxatile* Gyll., uncommon, in gravel by the same river. In both instances the beetles would be submerged at high tide. *Trechus quadristriatus* Schr., common. *Doronetes 12-pustulatus* Fab., under stones near the Kirtle mouth, rare. *Helophorus mulsanti* Rye, I caught three specimens in a pool on the marsh at Greta Fen years ago, but have not seen it since then. *Cercyon ustulatus* Preys., common in flood refuse. *Thanatophilus rugosus* Lin., common in carrion. *Catops fuscus* Panz., on a window in the house and fished from a pool on Newton Moss, both in May. *C. kirbyi* Spen., scarce, swept in a rough lane in June. *C. fuliginosus* Er., by evening sweeping, somewhat rare. *C. tristis* Panz., common. *C. morio* Fab., rather scarce. *Ptomaphagus subvillosus* Goeze, not uncommon by sweeping. *P. sericatus* Chaud., in moss, rare. *Scymnus nigrinus* Kug., a few from Scotch fir on Newton Moss in June. *S. suturalis* Thunb., not rare in June, but local. *Chilocorus bipustulatus* Linn., odd specimens swept from heather and beaten from sallow. *Telmatophilus caricis* Oliv., swept from a damp hedge bottom. *Paramecosoma melanocephalum* Hbst., the type form is plentiful at times in flood-refuse. A specimen of the var. *infuscatum* Halb. was beaten from a sallow bush at Quentin's Hill. *Byrrhus pilula* Linn., on or under stones but seldom met with. *Aphodius depressus* Kug., occasionally in dung. *A. punctato-sulcatus* Stm., abundant. *Rhinomacer attelaboides* Fab., rare and local, taken singly from Scotch firs in May and June. *Phytonomus ruficis* Lin., hardly common on sallows, etc. *Coeliodes dryados* Gmel., local on oak as

at Nutberry and Newton Moss, etc. *Allodactylus affinis* Payk., a few swept from *Geranium* in a rough field in July.—JAS. MURRAY, 6 Burnside Road, Gretna, Dumfriesshire : November 29th, 1937.

August Hemiptera in South Devon.—I spent the first fortnight of August collecting in and around Newton Abbot, and met with several Hemiptera that were new to me, though they may be common in these localities. The weather had been fine and hot before I arrived, and the ground everywhere was baked hard. During the whole fortnight I never was out in rain, and the parched condition of the vegetation—except down by the canal at Newton Abbot—probably accounts for the brief list of my captures.

Eurygaster maurus L. was first met with as nymphs, many of which matured after I got home, then later the imago was taken in Newton Abbot, at Drum Bridge and Chudleigh Heath.

Palomena prasina L. Almost every day of the fortnight I collected larvae of this species in various 'tages', but I never saw a mature specimen. I brought several nymphs home and two matured in due course, the remaining ones dying. *Dolycoris baccarum* L., a series of this Pentatomid was taken in a variety of places by sweeping, but I never saw an immature specimen, so that it must be an earlier species than most others. *Piezodorus lituratus* F., I took a specimen of this bug at Newton Abbot—the second only that I have seen alive—and two days before I left I swept up a nymph which matured during the journey north. My second day at Newton Abbot gave me one *Pentatomia rufipes* L., the only one I saw, which surprised me as, with *Elasmostethus interstinctus* L., of which I took one only, it is the commonest Pentatomid in Cheshire.

As might be expected of a northern collector, few Coreidae have come my way, so I was delighted when four nymphs of *Syromastes marginatus* L. were swept off varied herbage by the canal at Newton Abbot. Two of these matured later at home and the others died. *Corizus subrufus* Gmel. occurred twice, once by sweeping in a lane at Bickington and another one in Bradley Woods. *Cymus clavculus* Fall. occurred on two occasions only, while *Ischnorhynchus ericae* Horv. was plentiful where heather was swept, and beneath the roots of heather I found *Macrodera micropterum* Curt. *Stygnocoris rusticus* Fall., *S. pedestris* Fall. and *S. fuliginus* Geoff. occurred in odd ones by the canal—the only damp place I came across. *Scolopostethus thompsoni* Reut. and *S. decoratus* Hhn. were met with occasionally, while a series of *Derephysia foliacea* Fall. was beaten from ivy in my host's garden.

Nabidae were not common except as larvae, but mature specimens of *Nabis lativentris* Boh., *N. rugosus* L. and *N. ferus* L. were seen in the net. Perhaps the most interesting capture was a small series of *Acompocoris alpinus* Reut. beaten from a large Douglas fir in my host's garden at Newton Abbot. According to Butler's County List this is a new record for Devon, although it may have been recorded subsequent to 1923. The only previous capture I have made of this species was at Southbourne, Hants., in 1922 off Scots Pine.

Piezostethus cursitans Fall. occurred under bark. Between Drum Bridge and Bovey Tracey I was fortunate to take a macropterous *Pithanus mackeli* H.-S., the third specimen of this form that has fallen to my lot. A new Capsid to me was *Miridius quadrivirgatus* Costa, which occurred here and there in odd ones by sweeping long grasses. *Adelphocoris lineolatus* Goeze and *Calocoris roseomaculatus* De G. were common, but *C. sexguttatus* A. and

Stenotus binotatus F. were less so. *Lygus pratensis* L., with *L. kalmi* L. and *L. viscidula* Putz. occurred commonly, but I only took one specimen of *Macrolophus nubilus* H.-S. A few *Charagochilus gyllenhali* Fall. were met with, but *Dicyphus* as a genus was far from common, though I took a single very dark form of *Dicyphus globulifer* Fall. at Newton, and a pair of *Campyloneura virgula* H.-S. by beating in my host's garden. Two females of *Globiceps flavomaculatus* F. were swept up, one at Newton and the other at Chudleigh Heath. Three ♀ *Orthocephalus saltator* Hhn. and a pair of *O. mutabilis* Fall. occurred and a series of *Onychumenus decolor* Fall. were swept at Newton Abbot, but of *Oncotylus viridiflavus* Goeze. I took less than a dozen in the fortnight, although I swept every clump of knapweed that I came across. In some places, notably at Manaton, one small field contained huge patches of this weed and yet I never saw a single specimen of the *Oncotylus*, so that like other bugs it does not necessarily occur where its food-plant does.

Megacoleus molliculus Fall. occurred fairly plentifully and a small series of *Atractotomus magnicornus* Fall. occurred with the *Acompocoris* on the Douglas Fir. A single *Byrsoptera rufifrons* Fall. only occurred to me.

My thanks are due to Dr. R. C. L. Perkins, F.R.S., of Newton Abbot, for his ready help in informing me of likely places where I might search for material, and to Mr. H. Britten for his unfailing kindness in confirming my determination of the *Acompocoris* and other species about which I was doubtful.—H. R. P. COLLETT, 'Lauriston,' Park Road, Timperley, Cheshire: September 22nd, 1937.

Society

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held at 5 Hereford Square on October 9th, 1937, Major Philip P. Graves in the Chair.

Members present in addition to the Chairman: Mr. H. St. J. K. Donisthorpe, Mr. H. Willoughby Ellis, Mr. Jas. E. Collin. Visitor present: Dr B. P. Uvarov.

The meeting was called for 7 o'clock and the guests were received by the Chairman and Mrs. Philip Graves.

Dinner was served at 7.30. After dinner a reception was held at which many friends of the Chairman were present, amongst whom were: Capt. A. F. Hemming, Sir Guy A. K. Marshall and Capt. N. D. Riley. A buffet was provided and the whole party dispersed at a late hour after a most pleasant entertainment.—H. WILLOUGHBY ELLIS, *Hon. Secretary*.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST.

BY HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S., ETC.

(Continued from Vol. LXXIII, p. 274.)

Cryptophagus umbratus Er. In mole's nest, in badger's earth, loose hay, and oak frass with *A. (D.) brunneus*; not common. (i, iii, v, vii, xi.)

C. stramenti Donis. A fair number have been taken in hay- and straw-refuse in a deer-pen. (iv, v, vii.)

C. scanicus L. In sawdust and frass, in 'Sulphur Bracket'

fungus (*Polyporus sulphureus*), in hornets' and wasps' nests, by beating hawthorn blossoms, sweeping, and in numbers in dry dead squirrel; common. (iv, v, vi, ix, x, xi.)

C. scanicus L. ab. *patruelis* Sturm. Under the same conditions as the above, but much less common. (iv, vi, ix, x.)

C. ? fuscicornis Sturm. A specimen taken in frass from the roots of an oak, 19.vi.24, agreed well with the tables and description of this species. I sent it to the late Colonel J. Sainte Claire Deville, but it was broken in the post.

C. dentatus Hbst. At sap, under bark, sweeping, beating faggots and sallow blossoms, in swan's nest, fern-stack refuse, etc.; very common. (v, vi, vii, ix, x, xi.)

C. dentatus Hbst., ab *major* Donis. In rotten agarics, 'Sulphur Bracket' fungus (*Polyporus sulphureus*), 'Dryad's Saddle' fungus (*Polyporus squamosus*), and in some numbers in 'Birch Bracket' fungus (*Polyporus betulinus*). (v, vi, vii, ix, x.)

C. cylindrus Hies. By beating burnt Scots pine; scarce. (viii.)

C. pallidulus Sturm. In fresh cut oak sawdust; rare. (ix.)

C. acutangulus Gyll. In hay, straw and in bird's nest; not common. (ii, iv, xi.)

C. cellaris Scop. In cellars of the Crown Estate Office and in frass of *A. brunneus* nest; scarce. (xi, xii.)

C. affinis Sturm. By sweeping and in fern-stack refuse; not common. (vi, viii.)

C. pubescens Sturm. In hay refuse, by beating lime trees and honeysuckle, by evening sweeping, and in wasps' nests in the ground; common. (vii, viii, ix, x.)

C. løvendali Gang. At *Cossus* tree, on bones, and in numbers with its larvae in hornets' nests and wasps' nests in trees. (vii, ix, x, xi.)

C. bicolor Sturm. In hay and straw in deer-pens; not uncommon. (iv, v, vii, viii, x.)

Micrambe vini Pz. By sweeping melilot and beating gorse and broom; common. (iv, v, vii.)

M. villosa Heer. By beating faggots and sweeping in willow-swamp, by beating the cottony catkins of sallows, and by evening sweeping under fir trees; common. (v, vi, viii, ix.)

Henoticus serratus Gyll. By evening sweeping, under beech bark, and in 'Sulphur Bracket'; not common. (v, vi, viii.)

Paramecosoma melanocephalum Hbst. In damp spots; scarce. (x.)

Caenoscelis pallida Woll. One by evening sweeping (Allen, ix).

Atomaria umbrina Er. In fungi on stumps and by beating faggots in willow-swamp; scarce. (v, vi, ix.)

A. linearis Steph. By beating hawthorn blossoms, fir-tops, in fern-stack refuse, and by evening sweeping; not common. (v, vi, viii.)

A. elongatula Er. By beating fir-tops; scarce. (v.)

A. badia Er. By beating fir-tops and by evening sweeping; scarce. (viii.)

A. pulchra Er. On stacks of wood, under bark of oak logs, and in some numbers in and about the borings of *A. (D.) brunneus*. (iv, v, vi, vii, viii.) This species has only been found in Windsor Forest, where it was discovered by us in 1930.

A. peltata Kr. On stack of beech logs; scarce. (iv.)

A. morio Kol. Two specimens, the only British examples, were taken by us in a jackdaw's nest in November, 1928.

A. fuscata Sch. In moss in willow-swamp and by sweeping; common. (iv, v, vi, vii, viii, ix.)

A. zetterstedti Zett. Taken in some numbers by beating the cottony catkins of willow in willow-swamp; very local. (v.)

A. atra Hbst. By sweeping; not common. (viii, x.)

A. pusilla Payk. In straw-refuse, by beating faggots, and by evening sweeping; not uncommon. (vi, vii, viii.)

A. atricapilla Steph. In flood-refuse, moss in willow-swamp and fern-refuse; not very common. (vi, ix, xii.)

A. berolinensis Kr. In some numbers in moss in willow-swamp. (iv, v, vii.)

A. mesomelas Hbst. In swan's nest, moss in willow-swamp, grass round pond, and by sweeping reeds; not common. (iv, vi.)

A. apicalis Er. In manure-heaps, moss in willow-swamp, fungi; abundant in hawk's nest; common. (v, vi, vii, viii, ix, x, xii.)

A. analis Er. In moss in willow-swamp, in *Lycoperdon pyriforme*, and abundant in loose hay. (iv, ix.)

A. ruficornis Marsh. In fern-stack and straw refuse, swan's nest; abundant in cut grass and loose hay. (vi, vii, ix, x, xi, xii.)

Ephistemus gyrinoides Marsh. In manure-heap, cut grass and abundant in loose hay. (v, vi, vii, viii, ix, x.)

SCAPHIDIIDÆ.

Scaphidium quadrimaculatum Ol. In fungus on old beech, and not uncommon under beech logs; one specimen by beating hawthorn blossoms. (v, vi, vii.)

Scaphisoma agaricinum L. In damp fungoid wood and bark, etc.; common. (v, vi, viii, ix, x.)

MYCETOPHAGIDAE.

Typhaea fumata L. In swan's and moorhen's nests, sand-pit, by beating faggots, and abundant in haystack bottoms. (iv, vi, viii, xi.)

Triphyllus suturalis F. In 'Dryad's Saddle' fungus, 'Sulphur Bracket' fungus, etc.; abundant in heap of 'Stink Horn' fungi. (vii, viii, xi.)

T. punctatus F. Common in many species of fungi, especially *Fistulina hepatica*. (vii, viii, ix, x.)

Litargus bifasciatus F. In fungi—*Hypoxyton fuscum*, *Daldinia concentrica*, etc.; common under beech bark. (v, vi, vii, viii, ix, x.)

Mycetophagus quadripustulatus L. Very abundant in many species of fungi, especially Oyster fungus (*Pleurotus ostreatus*) on elms; once by beating hawthorn blossoms. (v, vi, vii, viii, ix, x, xi.)

M. quadripustulatus L. ab. *antemacularis* Torre. In Oyster fungus in company with the typical form; scarce. (x, xi.)

M. quadripustulatus L. ab. *ruficollis* Schilsky. In company with the above; scarce. (x, xi.)

M. piceus F. In many species of fungi; common. (v, vii, viii, ix, x.)

M. atomarius F. In fungi and under beech bark; not uncommon. (iii, v, vi, viii.)

M. multipunctatus Hellw. Common in various species of fungi, especially 'Dryad's Saddle.' (vi, vii, viii, ix.)

DERMESTIDAE.

Dermestes vulpinus F. The late E. W. Janson found it in some numbers in Windsor Forest, crawling over an old oak (teste the late Oliver Janson). I swept a specimen off Melilot, 21.viii.36.

D. murinus L. On dead squirrels and abundant on dead crows. (v, vii, x.)

Attagenus pellio L. In cut grass; very scarce. (v.)

Megatoma undata Er. By beating hawthorn and crab-apple blossoms, on old oak, by sweeping, and bred out of 'Tinder Bracket'; rather uncommon. (v, vi, vii.)

Tiresias serra F. Larvae abundant all the year round in spiders' webs under oak bark. We have reared a number—a larva taken 2.iv.34, pupated 5.v.35, and emerged 19.v.35—by feeding them on dead flies. Adults have been taken by us crawling on an old oak, on a fence, in hollow tree, in the 'Dryad fungus,' and several still in their pupa cases under bark. (v, vi, vii.)

Hadrotoma nigripes F. 'Near Windsor' (Stephens, 1839).

Anthrenus varius F. Once by sweeping flowers (10.vii.34).

A. museorum L. On Umbelliferae. (vi, vii, viii.)

A. claviger Er. In company with the above, but more abundant. (vi, vii, viii.)

Trinodes hirtus F. Larvae and imagines in cobwebs under oak bark. We have reared a few from the larvae—a larva taken 28.ix.26, pupated 17.v.27, emerged 21.v.27—by feeding them on dead flies. Imagines also taken on ledges in deer-pens, by sweeping in hollow trees, and by beating oak boughs; not uncommon. (v, vi, vii.)

BYRRHIDAE.

Byrrhus pilula L. In sand-pits, etc.; common. (iv, v.)

B. fasciatus F. In sand-pits; one by beating hawthorn blossoms; common. (v.)

B. dorsalis F. Not uncommon in sand-pits. (iv, v, viii.)

B. murinus F. In sand-pits; not as common as the three above species. (v.)

Cytilus varius F. In sand-pits, in damp places and in moss; not uncommon. (v.)

Simplocaria semistriata F. In moss, frequently by evening sweeping, and in numbers in a sand-pit; common. (v, ix, x, xi.)

Aspidiphorus orbiculatus Gyll. Frequently by evening sweeping, and in the fungus *Reticularia lycoperdon* on stumps; common. (vi, vii, viii, ix.)

PARNIDAE.

Limnius tuberculatus Müll. On weeds fished up from the bottom of the river at Windsor; rather common. (vii.)

Dryops luridus Er. (*Parnus prolifericornis* Fowler). In moss, in pond, and in *Sphagnum* pool; not abundant. (iv, vi, vii.)

HETEROCERIDAE.

Heterocerus marginatus F. In flood-refuse, on muddy banks of stream, and in mud round pond; fairly common. (iv, v, vi.)

H. laevigatus Panz. Common on mud round pond. (iv, vi.)

LUCANIDAE.

Lucanus cervus L. The 'Stag Beetle' is occasionally met with at roots of trees, on oaks, and on paths. In 1935 it was extremely abundant on a road near the Forest. (vi, vii.)

Dorcus parallelipedus L. In abundance in all stages in ash, elm and beech trees. At *Cossus* tree and in *Cossus* frass. A very small specimen was reared 9.ii.28 from a larva taken in 1926. (i, ii, v, vi, vii, ix.)

Sinodendron cylindricum L. In rotten beech and on beech stump; decidedly scarce. (i, vi.)

SCARABAEIDAE.

Onthophagus fracticornis Payk. On the wing, in deer's and other dung; sometimes abundant. (v, viii.)

Aphodius erraticus L. On the wing and in dung; sometimes abundant in cow-dung. (v, vi, vii.)

A. subterraneus L. In manure-heap and cow-dung; not common. (v.)

A. fossor L. In horse-dung, deer-dung; abundant in cow-dung. (v, viii.)

A. haemorrhoidalis L. In cow-dung and on the wing; not uncommon. (v, vi, vii, ix.)

A. foetens F. In cut grass, deer-dung and by sweeping; not common. (viii, ix, x.)

A. fimetarius L. In cut grass, hay-refuse, deer-dung; abundant in cow-dung. (iv, ix, x.)

A. scybalarius F. In cut grass; scarce. (ix.)

A. ater De G. In flood-refuse, deer-dung and cow-dung; common. (iv, v, viii, xii.)

A. constans Dufts. In cow-dung; scarce. (iv.)

A. granarius L. On the wing, in reed-refuse, in cut grass, and cow-dung. One by beating hawthorn blossoms; common. (v, vi.)

A. sordidus F. In deer-dung; scarce. (ix.)

A. rufescens F. Common in deer-dung. (vii, viii, ix.)

A. putridus Sturm. By evening sweeping, in fungus-dump, and in deer-dung; not uncommon. (v, viii, ix.)

A. varians Dufts. (*bimaculatus* Steph.). 'Rare: the only indigenous specimens which I have seen are in the collection of the British Museum; they were taken near Windsor many years ago' (Stephens, 1830). There are two specimens in the drawer of doubtful British Coleoptera at the Museum.

A. tristis Panz. In dung; scarce. (v.)

A. pusillus Hbst. In deer-dung (Allen); scarce. (vi.)

A. 4-maculatus L. 'Near Windsor' (Stephens, 1830).

A. merdarius F. In deer-dung (Allen); scarce (vi.)

A. sticticus Panz. In deer-, horse- and cow-dung, on the wing, and by evening sweeping, one specimen under bark; common. (iv, v, vi, viii, ix, x.)

A. punctato-sulcatus Sturm. In cow-dung, by evening sweeping, and in some numbers on the wing. (v, x.)

A. prodromus Brahm. In sand-pit, deer-dung and on the wing ; common. (ii, iii, iv, ix, x.)

A. contaminatus Hbst. In cut grass and on the wing ; abundant in deer-dung.

A. oblitteratus Panz. On the wing and in fungus dump ; scarce. (ix, x.)

A. zenkeri Germ. Abundant at times in deer-dung ; frequently by evening sweeping. (vii, viii, ix.)

A. rufipes L. In cut grass, horse-dung, deer-dung ; common. (viii, ix, x.)

Oxyomus porcutus F. In flood-refuse and cut grass ; not common. (v, vi.)

Geotrupes typhoeus L. In sand-pit, fungus-dump, in and under dung, often on grassy paths ; common. (ii, iii, v, vi, x, xi.)

G. spiniger Marsh. In flood-refuse ; once common under horse-dung. (i, ix.)

G. stercorarius L. In fungus-dump, cow-dung, deer-dung, on paths ; commoner than the above. (iv, v, viii, ix, x.)

Trox scaber L. In wood-mould and frass in oaks and elms ; common in birds' nests. (i, ii, vi, vii, viii.)

Hoplia philanthus Füss. On the wing ; scarce. (vi.)

Serica brunnea L. In sand-pits and on road ; not common. (vii, viii.)

Rhizotrogus solstitialis L. At foot of privet hedge, in lodge and on the wing at dusk ; local but not uncommon. (vii.)

Melolontha vulgaris F. By beating hawthorn blossoms and general beating ; sometimes in the greatest profusion on oak trees and on roads. (v, vi.)

Phyllopertha horticola L. By beating hawthorn, on the wing ; abundant flying in lodge garden and settling on the grass. (v, vi.)

Oxythyrea stictica L. 'Several specimens of this insect were taken three or four years since near Windsor by Mr. J. R. Griesbach' (Stephens, 1830). There is a specimen in the Stephensian collection.

Cetonia aurata L. By beating hawthorn blossoms and rhododendrons, and on the wing ; sometimes not uncommon flying round hawthorn trees in flower. (v, vi.)

(To be continued.)

TWO NEW OMALIID GENERA FROM AUSTRALIA
(COL. STAPHYLINIDAE).

BY W. O. STEEL.

Genus *Austrolophrum* n.

Small, more or less depressed, oval oblong species.

Head more or less triangular, constricted behind the eyes, the neck thick. Gular sutures separate, diverging behind. Ocelli distinct. Labrum transverse, rounded in front. Mandibles short, stout and pointed, the right with a forwardly directed tooth. Inner lobe of maxilla narrow, semi-circularly emarginate just before apex, which is sparingly ciliate; the outer lobe broader, densely ciliate at apex. Maxillary palpi with the 1st joint small, 2nd and 3rd stout, the 3rd slightly shorter than the 2nd, the 4th stout, bluntly pointed, just over twice as long as the 3rd. Mentum trapezoidal, narrowed in front, the sides and anterior margin straight. Tongue broad, in middle with a deep triangular excision. Labial palpi 3-jointed; 1st joint slightly longer than broad, 2nd about as long as broad, 3rd nearly as long as two preceding together.

Prosternum well developed, its process narrow and acute, coxae contiguous; epimera triangular, narrow, fused with epipleura, coxal cavities open behind. Mesosternum simple, its process narrow and pointed, reaching nearly the whole length of the coxae, which are very narrowly separated. Metasternum truncate in front, impressed behind in middle. Posterior coxae fused in middle (see fig. 1). First segment of abdomen keeled below. Scutellum triangular. Elytra extending beyond the episterna. Wings ample. Tibiae with some short spines externally. Tarsi clothed with long fine hairs; the anterior and middle pairs with the 1st joint slightly longer than the 2nd, 2nd to 4th short, the 5th as long as the four preceding together; posterior longer than half the tibiae, the first four joints gradually decreasing in length, the 1st slightly longer than the 2nd, the 2nd about as long as the next two together, the 5th as long as the four preceding together. In the males, the anterior tarsi are more dilated, and the anterior tibiae more or less modified.

The genus is found on flowers.

Genotype: *Amphichroum cribriceps* Fvl.

The species of this genus were placed by Fauvel and Blackburn in the genus *Amphichroum* Kr., from which they may easily be distinguished by the absence of foveae in front of the ocelli. *Amphichroum* also has edentate mandibles and an acute anterior metasternal process.

Austrolophrum resembles *Olophrum* Er., from which it may be distinguished by the labrum not being emarginate in front and by the length of the last joint of the posterior tarsi: in *Olophrum* this is shorter than the four preceding together.

Genus *Leaskia* n.

Head more or less triangular, constricted behind the eyes, the neck thick. Gular sutures separate, diverging behind. Ocelli distinct, each with a very small oblique impression in front of it. Labrum transverse, rounded in front. Maxillary palpi with the 1st joint small, 2nd and 3rd stout, the 3rd distinctly shorter than the 2nd, the 4th stout, bluntly pointed, about as long as 2nd.

Mentum trapezoidal, narrowed in front, sides and anterior margin straight. Labial palpi 3-jointed.

Prosternum well developed, its process narrow and acute, the coxae contiguous. Mesosternum simple, its process narrow and pointed, reaching nearly the whole length of the coxae, which are very narrowly separated. Metasternum truncate in front with a broad bilobed posterior process which overlies a small part of the coxae (fig. 2). First segment of abdomen keeled below. Scutellum triangular. Elytra extending beyond the episterna. Wings ample. Tibiae moderately spinose externally. Tarsi clothed with long fine hairs; the anterior and middle pairs with the 1st joint as long as the next three together, and, 3rd and 4th small, subequal, the 5th as long as the preceding four together; posterior longer than half the tibia, 1st joint as long as the next three together, 2nd and 3rd small, equal in length, the 4th slightly shorter than the 3rd, the 5th as long as the four preceding combined. Tarsal claws large (fig. 3).

Genotype: *Leaskia acidotiformis* n.sp.

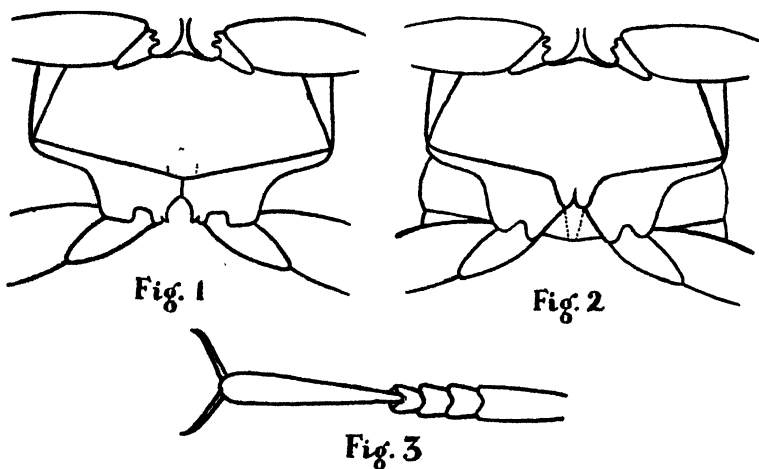


FIG. 1.—Metasternum and posterior coxae of *Austrolophrum cribriceps* Ful.
 „ 2.—Metasternum and posterior coxae of *Leaskia acidotiformis* n.sp.
 „ 3.—Posterior tarsus of *Leaskia acidotiformis* n.sp.

As the type is unique, I have been unable to make a dissection of the mouth-parts, and therefore cannot give a detailed description of these.

The specimen before me is a male and has the anterior tarsi rather strongly dilated. This may prove to be a sexual character as in *Austrolophrum* q.v.

This genus seems to be most nearly related to *Austrolophrum*, but is very distinct on account of the structure of the metasternum and the tarsi.

I have pleasure in naming it after Mr. M. F. Leask, of Ballarat, Victoria, by whom the genotype was taken.

***Leaskia acidotiformis* n.sp.**

Greasy lustrous, pitchy testaceous; antennae pitchy testaceous, becoming darker towards apex, mandibles pitchy brown, palpi and legs pitchy testaceous, disc of thorax and base of abdominal segments infusate.

Length: 5 mm.

Facies superficially somewhat resembling *Acidota cruentata* Mann. Head strongly coriaceous, moderately strongly and closely punctured in front and at sides, elsewhere diffusely punctured. Antennae as long as head and thorax together, 1st joint large, stout, 2nd small, 3rd longer than 2nd, 4th shorter, about as long as 2nd, 5th broader, sub-triangular, about as long as 3rd, 6th to 10th triangular, sub-equal, about as long as 5th, 11th longer, bluntly pointed at apex, all joints longer than broad. Thorax transverse, nearly twice as broad as head, anterior angles rounded, posterior angles oblique; strongly coriaceous and diffusely punctured. Elytra as wide as and longer than thorax, very slightly widened behind; closely and rather strongly punctured. Abdomen bordered at sides, its segments strongly coriaceous, with few scattered punctures.

♂ Tarsi rather dilated (?).

♀ Unknown.

Wannon Valley, Victoria (M. F. Leask). Type in the British Museum collection. Unique.

16 Upsdell Avenue, London, N.13.

November 10th, 1937.

SOME ANTS OF THE SUBGENUS *PLANIMYRMA* VIEHMEYER OF THE
GENUS *APHAENOGASTER* MAYR.

BY HORACE DONISTHORPE, F.Z.S., F.R.E.S., ETC.

(Department of Entomology, British Museum (Nat. Hist.).)

Emery [Genera Insectorum, 174A: 56 (1921)] separates the subgenera *Planimyрма* Viehmeyer (1914) and *Deromyrma* Forel (1913) from the other three subgenera of *Aphaenogaster* Mayr (1853) as follows:—

‘Tous les sexes: Tête prolongée en col; aile antérieure à une seule cubitale fermée’; and from each other:—

‘Pronotum inerme chez les ouvrières et les femelles; antennes des mâles de 13 articles; espèces asiatiques, américaines et malgaches *Deromyrma*.

‘Pronotum armé ou inerme chez les ouvrières et les femelles; antennes des mâles de 12 articles; espèces de la Nouvelle Guinée *Planimyрма*.’

A new genus might be erected for these two subgenera, but more material is wanted, especially in the latter, of which only three species are known, and the males of only two of them.

In the meantime we now describe a new variety, a new subspecies and a male, all from New Guinea.

Aphaenogaster (Planimyrma) dromedarius Emery
var. **nigra** var. n.

♀. Jet black, very shining, the mandibles, funiculi of antennae and tarsi ferrugineous.

This variety only differs from the typical form and the var. *fusca* Emery in its jet black colour, the neck being very slightly but distinctly shorter, and the bristles on the whole body a little shorter and stouter. Long: 8.7 mm.

Described from nine workers, Mt. Nomo, 600-1,500 ft., six workers, Njau Limon, 300 ft., Dutch New Guinea, taken by Miss L. E. Cheesman on trees, November, 1936. Type in B.M. Coll.

Aphaenogaster (Planimyrma) quadrispina Emery
subsp. **wheeleri** n.

♀. Whole body shining, especially the head, and clothed with long, scattered, erect, pale yellow hairs. Colour very variable. Head and neck jet black, but occasionally lighter or darker brown; clypeus and mandibles lighter or darker red; sometimes the clypeus is black; masticatory border and teeth black. Scapes of antennae black, or dark brown, funiculi and insertion of the antennae red. Thorax shining black, but sometimes brown; spines black, brown, or sometimes yellow in the middle; coxae bright light yellow, or dirty yellowish-brown; legs darker or lighter yellowish-brown; tarsi and spurs lighter. Petiole and post-petiole dark brown, or lighter yellowish-brown; gaster light yellow at base and along third segment, rest black or brown, or all dark brown, or nearly black.

Head chiefly smooth; mandibles finely longitudinally striate; clypeus transversely striate; antennal foveae with circular striae round them. Thorax: pronotum with strong longitudinal ridges between the spines and at the sides; spines long and sharp, extending outwards and slightly downward; mesonotum with longitudinal ridges at the sides; epinotum with transverse ridges on the dorsal surface, and longitudinal ridges at the sides; the epinotal spines are not as long as the pronotal ones, sharp, and bending slightly outwards and downwards, the declivity between the spines is smooth and shining; petiole, post-petiole and gaster chiefly smooth and shining. Long. 8.5 mm.

Described from twelve workers taken by Miss L. E. Cheesman at Kokoda, Papua, 1,200 ft., crawling on tree-trunks. Ten were taken in April, one in August and one in October, 1933.

I have named this insect in honour of the late Professor W. M. Wheeler, who told us it was a new subspecies of *A. (P.) quadrispina* Emery. Type in B.M. Coll.

This new subspecies differs from the typical form in colour, and also in possessing ridges on the whole of the sides of the thorax, instead of only on the metanotum (epinotum?) as given by Emery in his description [Nova Guinea, 9, Zool., 251-2 (1911)] and from *A. (P.) dromedarius* Emery and *A. (P.) lorai* Emery by its colour, smaller size and shorter neck.

Aphaenogaster (Deromyrma?) dromedarius Emery (?).

♂. Pale brownish-yellow, shining; scapes, femora and tibiae darker, funiculi and tarsi lighter, clothed with long, erect, scattered brown hairs, which are much more abundant on the scapes, femora and tibiae; those on the funiculi being finer, closer and paler.

Head long, narrowed in front and behind, ending in a very long neck; *mandibles* long, triangular, finely longitudinally striate, armed with three teeth at apex, the apical one long and pointed; *clypeus* large, convex, anterior border rounded with a rather pointed lobe at each side; finely longitudinally striate; *frontal area* distinctly defined, smooth and shining; *eyes* very large and convex; ocelli large and prominent; *antennae* long, 13-jointed; *scape* very long, equal to the first ten joints of the funiculus taken together; *funiculus* with short first joint, not half as long as the second, two-eleven sub-equal, last joint slightly longer, tapering to a point. *Thorax* about as broad as head; *pronotum* short, unarmed; *mesonotum* globose, projecting forwards over the pronotum in a rounded hump; *scutellum* globose and prominent; *metanotum* narrow; *epinotum* slightly narrowed in centre; *dorsal surface* long, shallowly incurved to the declivity, which is short and round. *Petiole* long, with two blunt projections near base, slightly thickened to apex, bearing a low rounded node; *post-petiole* slightly shorter and broader than petiole and with a higher rounded node; *gaster* pear-shaped, broadest behind middle, first segment very long. *Legs* long, tarsi as long as the tibiae. *Wings*: forewing 5 mm., pale brownish-yellow, *pterostigma* and *veins* darker, one *discoidal cell*, one long *cubital cell*, and one long open *radial cell* present. *Long.* 8.2 mm.

Described from two males taken by Miss L. E. Cheesman at Kakoda, Papua, 1,200 ft., at light, June, 1933.

I am strongly inclined to think that this insect will prove to be the ♂ of *A. (P.) dromedarius* Emery.

In 1911 Emery (l.c., p. 258) described what he took to be the ♂ of his *quadrispina* (in which I believe he was undoubtedly correct) with two small spines on the pronotum and two slightly longer ones on the scutum of the mesonotum. He did not, however, state how many joints there were to the antennae.

In 1914 Viehmeyer described the ♂ of *A. (P.) lorlai* Emery with two spines to the pronotum, two very small spines to the praescutum, and with twelve-jointed antennae, and on this account he founded the subgenus *Planimyrra* [Zool. Jahrb., 37: 604, 605 (1914)].

Should our insect be the ♂ of *dromedarius* Emery, that species will have to be placed in the subgenus *Deromyrma* Forel, with the pronotum unarmed in the ♀ and ♂, and the antennae thirteen-jointed in the latter.

Besides the insects described in this paper Miss Cheesman also took *dromedarius* Emery (typical workers) and *lorlai* Emery ♀♀ in Papua.

British Museum (Natural History),
Cromwell Road, London, S.W.7.

December 9th, 1937.

THE OCCURRENCE OF A SPECIES OF CAPSID (HEMIPTERA-
HETEROPTERA) NEW TO BRITAIN.

BY D. C. THOMAS, B.SC., A.R.C.S.

On September 4th, 1937, I observed a considerable number of very small and pale Capsids on Hollyhock in my garden at Ealing, Middlesex. They proved to be a species of the genus *Campylomma* new to Britain, *C. verbaschi* Mey.-D. (Meyer-Dur, 1843, Verzeichniss der in der Schweiz einheimischen Rhynchoten. Capsini p. 70, pl. 4).

The bugs were very active and flew readily, so that I only secured five males and one female out of some thirty or forty seen in the garden. The hollyhocks are being kept in the garden in the hope that eggs have been laid in them and that another generation will appear this year.

This is the second species of *Campylomma* recorded in Britain, *C. nicolasi* Put. and Reut., having been seen in numbers on apple near Chertsey, Surrey, in 1932 (China, W. E., 1932, E.M.M. 68, 180, 1 fig.). It is less surprising to find *C. verbaschi* since according to Reuter, it is fairly widely distributed on the Continent on such plants as *Verbascum*, *Carduus* and *Echium*. H. Knight has recorded it in the United States as breeding on apple trees.

China (loc. cit) has given an ample description and figure of the female of *C. nicolasi*, and *C. verbaschi* differs from it only in the following characters. *C. verbaschi* is larger, 3.0 mm., and has narrower hemelytra in comparison with the width of its pronotum. The middle of the cuneus, a band along the inner margin of the corium and the apical half of the clypeus are dark fuscous instead of sordid white as in *C. nicolasi*. The black apical annulation of the first antennal segment is entire and not interrupted. Its small size and pale colour will distinguish it from all other British Capsids.

I am much obliged to Mr. W. E. China for confirming my identification and allowing me to compare my specimens with those of *C. verbaschi* and *C. nicolasi* in the British Museum collection.

Rothamsted Experimental Station,
Harpenden, Herts.
January 7th, 1938.

NOTES ON THE NOMENCLATURE OF BRITISH CORIXIDAE.

BY W. E. CHINA, M.A.

Recently while engaged on the preparation of the section of 'The generic names of British Insects,'* dealing with the Hemiptera, I have had occasion to reconsider the use of the generic names *Corixa* and *Sigara*. Although much has been written on this subject, some doubt still exists as to the correct interpretation of the facts. At the risk of boring specialists well acquainted with the subject, I propose to summarise the results of my investigations.

The problem of the usage of *Corixa* Geoffr. and *Sigara* F., which was first brought forward by Schumacher in a paper entitled 'Sigara vs. Corixa' (Deutsch. Ent. Zeitschr., 1924, pp. 337-339), is entirely independent of genotype fixation since both genera are monobasic. It rests rather on the identity of the type species. The problem has been unnecessarily confused by the argument as to the validity of Geoffroy's 'Hist. abrégée Ins., Paris, 1762. According to Reuter (Revis. Synon. Heteropt. Palaearct., Act. Soc. Sci. Fenn. XV, p. 277, 1888), this work is invalid since it does not as a whole follow the binary system of nomenclature, and consequently Geoffroy's genera should date from 1785 (Fourcroy, Ent. Paris). Kirkaldy (Entomologist, XXXIII, p. 238, 1900) believed, however, that the work should be accepted and maintained that in any case all Geoffroy's genera (except *Tetigonia*) were validated by O. F. Müller in the table comparing Linnaean and Geoffroyian genera at the commencement of his Fauna Ins. Fridrichsdalina, p. xviii, 1764. Müller does not mention species in this table so that it is in effect non-binary, although the rest of the book is binominal. Actually, therefore, it is a matter of personal opinion whether Müller has validated the Geoffroyian genera or not. Walley more recently (Bull. Brooklyn Ent. Soc., XXV, No. 1, p. 49, 1930) claimed Geoffroy's genus *Corixa*, 1762, as valid under Articles 2 and 25 of the International Rules but gave no additional evidence. This question of the validity of Geoffroy's 1762 work would have been of some importance in respect of this problem if the genotypes of *Corixa* Geoffr. and *Sigara* F. had been congeneric. One or other of the two names would then have been a synonym of the other according as to whether 1762 or 1785 was taken as the valid date of *Corixa* Geoffr. Since, however, the genotypes are not congeneric, neither of the two genera can ever be synonymous with the other. Kirkaldy (Entomologist, XXXIII,

* Published by the Royal Entomological Society of London.

p. 262, 1900) maintained that *Sigara* F. was homotypical with *Corixa* Geoffr. and consequently identical, because he believed that *Sigara striata* F. 1775 was not *Notonecta striata* L. 1758 but *Corixa striata* Geoffr. (= *geoffroyi* Leach). By his acceptance of Geoffroy's 1762 work and his synonymy of *S. striata* F. with *C. striata* Geoffr., Kirkaldy made *Sigara* a synonym of *Corixa* and used *Arctocorisa* Wallengren 1894 (*Basileocorixa* Kirk. 1898) for those species congeneric with *Notonecta striata* L. Kirkaldy's identification of *S. striata* F. was apparently based on Fabricius' reference to Geoffroy's 1762 work, but Fabricius first referred to Linné's *Systema Naturae* 1758 and repeated Linné's original description, so that *striata* L. is much more logically the type of *Sigara* F. than is *striata* Geoffr. As pointed out by Schumacher, the diagnosis distinctly says 'lineolis transversis undulatis striatis,' which cannot apply to *C. striata* Geoffr. (= *geoffroyi* Leach). Schumacher makes much of De Geer's 1773 (*Mem. Hist. Ins.*, III, p. 389) division of *Notonecta striata* L. into two species, the types of which he says still exist and have been investigated by Reuter. Since De Geer gave no name to the new species which he split off from *striata* L., his types have no value.

Goeze (*Ent. Beytr.*, II, p. 167, footnote 1, 1778) also recognised that the Linnean name *striata* covered two kinds of insect, a large and a small, but thought they were forms of the same species. In footnote 2 on the same page, he stated that *Sigara* F. was generically distinct from *Notonecta* L., as had been previously recognised by Geoffroy and Schaeffer (*Icones Ins. Ratisbon*, I, tab. 97, 1804), who had named it *Corixa*. Although this might be taken to constitute a validation of *Corixa* Geoffroy, it is too late, since the Fabrician genus *Sigara* had already (*Syst. Ent.*, p. 691) been established three years previously. Schumacher reminds us that Latreille in 1804 (*Sonnini's Buffon, Ins.* XII, p. 289) was the first to resolve *striata* L. into two species, validly; but unfortunately he selected as typical *striata* the species which does not agree with the Linnean diagnosis, renaming the true *striata* L. as *strigata* Latr., which therefore becomes a synonym of it. According to Schumacher, Latreille was influenced more by the references than by the diagnosis, and in this attitude he must have been followed by Kirkaldy. As shown by Schumacher, it was Illiger in his annotated edition of Rossi's *Fauna Etrusca*, published at Helmstadt in 1807 (a work previously overlooked by the majority of Hemipterists), who was the first to clear up the confusion. Illiger correctly used the name *Sigara* for the genus, identified *striata* L. as

the small species with the transverse lines, pointed out that it had been figured by De Geer and wrongly renamed by Latreille as *strigata*, and showed how it differed in size and colour-pattern from Geoffroy's *Corixa striata*, which he renamed *punctata*. Illiger's name therefore takes priority over *geoffroyi* Leach. With regard to the argument as to relative value of diagnosis and references, I have taken the trouble to look up some of the references given by Linnaeus for his *Notonecta striata*. The first is Petiver's *Gazophylacium*, t. 72, fig. 7. This figure is unrecognisable. It is apparently more or less natural size, but is much too big for *striata* auct. and it is too elongate for *geoffroyi* auct. The second reference is to Roesel's *Ins.*, p. 177, t. 29. This is quoted also by Fabricius. In the text Roesel states that figs. a and b are twice natural size, in which case the insect is only 7 mm. long and far too small to represent *striata* Geoffr., which that author stated was $5\frac{1}{2}$ lines (French) long, or about 12 mm. There is thus no doubt whatever that *striata* Geoffr. is distinct from *striata* L. and was correctly renamed by Illiger and subsequently again by Leach. Neither is there any valid reason to suppose that *Sigara striata* F. was not *Notonecta striata* L. Fabricius' reference to Geoffroy was obviously made in quite a formal way, merely because Geoffroy, who had misidentified his species as *N. striata* L., had referred to it as such. Consequently there is no escape from the logical conclusion that the Fabrician name *Sigara* must be used in place of *Arctocoris* Wallengr. and cannot be used, as by former British Hemipterists, for *Notonecta minutissima* L., for which Kirkaldy's name *Micronecta* must be used.

In 1818 Dr. W. E. Leach published a paper entitled 'On the Classification of the Natural Tribe of Insects Notonectides, with Descriptions of the British Species' (*Trans. Linn. Soc. Lond.*, XII, pp. 10-18, 1817). In this work he enumerated eight British species of the Geoffroyian genus *Corixa*, of which the following were described as new species: *Corixa stagnalis*, *C. fossarum*, *C. lateralis*, *C. dorsalis* and *C. affinis*. Of these species only *C. fossarum* and *C. affinis* have been given a place in the present British list.

In 1900 Kirkaldy (*Entomologist*, XXXIII, p. 10) reduced the generally accepted *C. hieroglyphica* Duf. 1833 to the status of synonym of *C. lateralis* Leach 1818. In 1916 Van Duzee (*Check List of Hemiptera of America north of Mexico*, p. 54) reduced *C. limitata* Fieb. 1848 to the status of synonym of *C. stagnalis* Leach 1818. *Corixa dorsalis* Leach remained unknown. Leach's types are supposed to be in the British Museum collection, but a careful

search has failed to bring them to light. In the Stephens collection, however, were found representative series of all Leach's species. Now this collection was formed during the early part of the last century and Stephens was contemporaneous with Leach. In the absence of Leach's types it is therefore permissible to assume that these specimens were correctly named according to the standards generally accepted at that time.

During a recent visit to the British Museum (Nat. Hist.), Dr. T. Jaczewski, the well-known authority on Corixidae, kindly undertook to examine the Stephens specimens. As was to be expected in so old an arrangement, the names were found to cover a varied assortment of species, but by a comparison with Leach's descriptions and by taking the species most numerous represented, Dr. Jaczewski came to the following conclusions:—

Corixa stagnalis Leach (= *S. lugubris* (Fieber) 1848).

C. lateralis Leach (= *S. hieroglyphica* (Dufour) 1833).

(*C. dorsalis* Leach) = *S. striata* (L.) 1758.

(*C. striata* (Leach) & Stephens) = *S. sahlbergi* Fieber 1848.

This means Van Duzee's identification of *C. stagnalis* Leach as *C. limitata* Fieb. was wrong. Leach wrote of *C. stagnalis*: 'Habitat in aquis stagnantibus putridis vulgatissime.' Now this is particularly true of *S. lugubris* (Fieb.), of which Butler writes: 'This species is specially addicted to stagnant ponds . . . it flourishes in such (brackish) dykes however stale and stagnant the water may be.' *S. limitata* (Fieb.), on the other hand, is found in ponds of relatively fresh water.

The list of British Corixid species will therefore run as follows:—

BRITISH CORIXIDAE.

(British synonymy only.)

Genus *CORIXA* Geoff. 1785.

Syn. *Macrocorisa* Thoms. 1869; *Macrocorixa* B. White 1874.

1. *C. punctata* Illig. 1807 (genotype).

(= *geoffroyi* Leach 1818).

2. *C. dentipes* Thoms. 1869.

3. *C. affinis* Leach 1818.

(= *atomaria* Fieb. 1848).

4. *C. panzeri* Fieber 1848.

Genus *SIGARA* F. 1775.

Syn. *Arctocorisa* Wallengren 1894; *Basileocorixa* Kirk. 1898;

Corixa auct. nec. Geoff.; *Corisa* Latr. 1825 (emendation);

Glaenocorisa Saunders 1892 nec. Thoms. 1869.

Subgenus **Antilecorixa** Jaczw. 1924.

5. *S. (A.) linnei* (Fieb.) 1848.
6. *S. (A.) sahlbergi* (Fieb.) 1848 (genotype).
(= *striata* Leach 1818 nec. L. 1758).
7. *S. (A.) moesta* (Fieb.) 1848.
8. *S. (A.) castanea* (Thoms.) 1869.

Subgenus **Callicorixa** B. White 1873.*

9. *S. (C.) praeusta* (Fieb.) 1848.
(= *sodalis* D. & S. 1870).
(= *socia* D. & S. 1870).
(? = *boldi* D. & S. 1870).
10. *S. (C.) wollastoni* (D. & S.) 1865.
var. *caledonica* Kirk. 1897.
(= n.n. for *cognata* D. & S. 1870).
11. *S. (C.) concinna* (Fieb.) 1848.

Subgenus **Subsigara** Stichel 1935.Syn. *Selecorixa* Walton 1936.

12. *S. (S.) fossarum* (Leach) 1818 (genotype).
(= *prominula* Thoms. 1869).
13. *S. (S.) scotti* (D. & S.) 1868.
14. *S. (S.) falleni* (Fieb.) 1848.
15. *S. (S.) pearcei* Walton 1936.†
16. *S. (S.) distincta* (Fieb.) 1848.
(= *douglasi* D. & S. 1865).

Subgenus **Sigara** F. 1775.

17. *S. (S.) striata* (L.) 1758 (genotype).
(= *dorsalis* Leach 1818).
18. *S. (S.) limitata* (Fieb.) 1848.
19. *S. (S.) semistriata* (Fieb.) 1848.
20. *S. (S.) venusta* (D. & S.) 1869.
21. *S. (S.) nigrolineata* (Fieb.) 1848.
(= *fabricii* (Fieb.) 1851).
(= *inicans* D. & S. nom. nud.).
(= *decora* D. & S. 1869).
(= *whitei* D. & S. 1869).
(= *borealis* D. & S. 1869).
(= *dubia* D. & S. 1869).

* I have dissected the types of *S. sodalis*, *S. socia*, and *S. caledonica*. I find the first two species identical with *S. praeusta* but *S. caledonica*, although structurally identical with *S. wollastoni*, differs in size and colour pattern and must be regarded as a distinct variety of that species.

† This species is closely allied to the Canadian *S. fallenioides* Hungerford, 1926.

- (=*perplexa* D. & S. 1869).
 (= ? *saundersi* Kirk. 1899).
 22. *S. (S.) stagnalis* (Leach) 1818.
 (= *lugubris* Fieb. 1848).
 (= *stålî* D. & S. 1865).
 23. *S. (S.) selecta* (Fieb.) 1848.
 24. *S. (S.) lateralis* (Leach) 1818.
 (= *hieroglyphica* Duf. 1833).
 25. *S. (S.) carinata* (C. Sahlb.) 1819.
 (= *sharpi* D. & S. 1869).
 26. *S. (S.) germari* (Fieb.) 1848.
 (= *intricata* D. & S. 1869).

Genus *GLAENOCORISA* Thoms. 1869.

Syn. *Oreinocorixa* B. White 1873.

27. *G. cavifrons* Thoms. 1869 (genotype).
 (= *alpestris* D. & S. 1870).

Genus *CYMATIA* Flor 1860.

28. *C. bonsdorffi* (C. Sahlb.) 1819.
 29. *C. coleoptrata* (F.) 1776 (genotype).

Genus *MICRONECTA* Kirk. 1897.

Syn. *Sigara* D. & S. 1865 and Saunders 1892 nec. F. 1775.

30. *M. minutissima* (L.) 1758 (genotype).
 31. *M. poweri* (D. & S.) 1869.
 (= *borealis* Lundh. 1936).
 32. *M. scholtzi* (Scholtz) 1846.

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A NOTE ON THE CONTROL OF MALARIA MOSQUITOES BY CARP IN MOROCCO AND THE EFFECT OF MOSQUITO CONTROL MEASURES ON THE OCCURRENCE OF THE MOROCCAN LOCUST.

BY K.H. CHAPMAN, B.A., F.R.E.S.

One of my camps in Morocco in August, 1934, was made at Ouiouane, in the Middle Atlas Mountains, among thick cedar forest, camp being pitched in the middle of a rather spacious glade. One of the most striking features of this place was the absence of mosquitoes, in spite of the presence of several small lakes and large ponds. After previous experience of camping at Aguelman (Lake) Sidi Ali on Mohammed and Timhadit, only a few miles away, where *Anopheles* made life almost unbearable and

necessitated sealing up tents at night and wearing riding-breeches, and puttees to protect one's ankles, this was especially noticeable. Malaria is a common disease in Morocco, and I was interested to learn from M. Jean-Paul Azais, forestry officer at Ouiouane, that this locality had previously been considered one of the worst spots in the Middle Atlas for malaria. Yet when I was there, not a single *Anopheles* was seen, and M. Azais told me that French officers suffering from bad attacks of malaria are now sent up to Ouiouane to recover. M. Azais attributed the disappearance of the malaria-carrying mosquitoes to the introduction of a large carp into the lakes. I caught a number of these fish which turned out to be the 'Mirror Carp,' a domestic breed of the Common Carp, *Cyprinus carpio* L., which has very large scales.

Larvicidal fish have, of course, been used in many parts of the world in controlling *Anopheles*, particularly species of *Gambusia*. The carp has, however, been tried in Madagascar (Legendre, 1916) and Pittaluga (1918) recommends its use in eradicating malaria mosquito larvae in the canal of the irrigation system in Upper Aragon. Ferni (1933) however, states that in Sardinia the use of carp against mosquito larvae is mainly indirect, the carp having been introduced to clear the water of aquatic vegetation, which was so thick that it prevented *Gambusia* from reaching the larvae. He concludes that the success of the carp introduction was due to the destruction of the water plants, but that the most important effect was the resulting free movement of the water, which was a more important factor in the disappearance of the mosquito larvae than the *Gambusia*. This is an interesting point, because aquatic vegetation was found to be scarce in the lakes at Ouiouane where carp have been introduced; and on the other hand, no remains of mosquito larvae or pupae were found in the stomachs of the carp, although they contain remains of many other insects, including Orthoptera.

My own opinion is that the raising of the level of the Ouiouane lakes so as to cover their former marshy edges with a fair depth of water, and the draining of adjacent marshy areas, have played the greater part in the extermination of *Anopheles* here. This leads to the most interesting question of the inter-relation of *Anopheles* and locust control. On areas of former marsh, now drained, at Ouiouane and other localities, we find an assemblage of plants of genera such as *Anthyllis*, *Helianthemum*, *Cistus*, *Thymus*, *Poterium*, etc., which Uvarov (1928, p. 227) states are characteristic of the breeding-places of the Moroccan Locust,

(*Doclostaurus maroccanus* Thunb.) and I found this insect at Ouiouane in 1934, although the time of year (August) was too late to ascertain whether the locust was breeding here. It may thus occur that by draining wet land as a mosquito control measure, locust breeding may be encouraged, and this may be compared with the instance given by Uvarov (1928, p. 228) of extensive swamp draining in the Hungarian plains to eliminate *Locusta migratoria* L., and the subsequent appearance of *Doclostaurus maroccanus* with the resulting change of vegetation.

It may be noted that at Lake Sidi Ali, where *Anopheles maculipennis* Meigen was exceedingly common, the only large fish caught in the lake was a local form of the trout (*Salmo trutta* L.) and examination of the stomach contents of this fish showed that it is largely a ground-feeder, at any rate in August, the stomachs containing almost exclusively caddis fly larvae of the family Odontoceridae.

Dr. F. W. Edwards informs me that *Anopheles maculipennis* Meigen is the commonest malaria-carrying mosquito of Morocco. D'Anfreville (1916) states that this species appears in April in Morocco and disappears in September, being very scarce from October onwards, though a few specimens are still found up to the beginning of January, which is the coolest part of the year in Morocco. I have, however, found *A. maculipennis* until well into September in the Great and Middle Atlas Mountains of Morocco, and the only other camp at which mosquitoes did not trouble us was near the falls on the Oum er R'bia river (Middle Atlas). Here their absence may be due to the water-movement caused by the impact of the falls and also to the extreme salinity of the water.

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January 15th, 1938.

Review.

'THE MACROLEPIDOPTERA OF THE WORLD.' Edited by DR. ADALBERT SEITZ. Fauna Palaearctica. Supplement. Parts 58-60, 67-70. 12 plates. Stuttgart: Alfred Kernen, Publisher. 1937.

In these recently issued supplementary parts of Dr. Seitz's great faunistic work Mr. L. B. Prout and Dr. M. Draudt, with their usual high efficiency, continue to deal with the very numerous forms of the Geometrina and Noctuidina that have been discovered and described from the Palaearctic region since the publication of the volumes dealing with this fauna. A glance at the plates in these early volumes will exhibit at once the great advance in the excellence of the colour-work as shown in those of the Supplements; and it is certain that the value of this momentous undertaking to Lepidopterists as a body will continue to be enhanced for many years to come.

Obituary.

Major Ernest Edward Austen, D.S.O.—Major E. E. Austen, late Keeper of the Department of Entomology of the British Museum, died on January 16th after a short illness. Born on October 19th, 1867, he was educated at Rugby, where his enthusiasm for Natural History was already so marked as to isolate him in some degree from his fellows. From there he went to the University of Heidelberg, and in 1889 entered the service of the British Museum, where he was given charge of the collection of Diptera, and where from 1927 till his retirement in 1932 he was Keeper of the Department of Entomology.

In 1895-96, as naturalist on the cable ship *Faraday* he collected insects in Brazil, and in 1899 went with Sir Ronald (then Major) Ross from the Liverpool School of Tropical Medicine to study mosquitoes in Sierra Leone. From here he went to South Africa and served with the C.I.V. in the Boer War. At the outbreak of the Great War he was called up for service as a company commander in the Artist's Rifles, but after a short time in France was transferred as entomologist to the Egyptian Expeditionary Force. In the intervals of his official duties on malarial and fly-control work in Palestine, which gained him the D.S.O. and his majority, he made an extensive collection of the Diptera of the country, but it was only after his retirement that he was able to work these up and published *The Bombyliidae of Palestine* (1937). On his return from the Boer War he devoted his attention to the blood-sucking flies, producing his *Monograph of the Tsetse Flies* (1903), followed by the *Handbook of the Tsetse Flies* (1911), *The British Bloodsucking Flies* (1906), etc. He was also responsible for the exhibit of insects in relation to disease at the Wembley Exhibition (1925). The well-known pamphlet published by the Museum, 'The Housefly as a Danger to Health' (1920), was also his handiwork.

Though he never joined the Entomological Society, he had served on the Council of the Zoological Society of London; he was at one time vice-president of the Royal Society of Tropical Medicine and Hygiene, and was a member of the executive committees of the Imperial Institute of Entomology and of the Society for the Preservation of the Fauna of the Empire.

One of his first acts as Keeper of the Department of Entomology was the annual Departmental Dinner, a function in which he took no little pride and

which has continued ever since to grow in popularity. The eleventh of the series, on December 15th, was the last occasion on which many of us saw him.

Major Austen leaves two daughters to whom we would offer our very deep sympathy in their bereavement.—K.G.B.

THE HIPPOBOSCIDAE (DIPTERA) RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON

(Concluded from p. 17.)

4. *Olfersia aenescens* C. G. Thomson.

Olfersia aenescens Thomson, 1869, Kongliga Svenska Fregatten Eugenies Resa, etc., Stockholm, II, Zool., Insecta, I, Diptera, Pt. 12, pp. 610-611.

Olfersia erythropsis Bigot, 1885, Ann. Soc. ent. Fr., (6), V, p. 239.

Pseudolfersia diomedea Coquillett, 1901, Proc. Wash. Acad. Sci., III, p. 379.

Pseudolfersia spinifera Ferris and Cole (not of Leach), 1922, Parasitology, XIV, pp. 196-198, f. 13, 14 A and C (in part).

Olfersia erythropsis Bigot, Bequaert, 1933, Psyche, Camb., Mass., XL, pp. 102-104.

Thomson's description was based on a specimen from Keeling I. Bigot's specimen of *O. erythropsis* was collected in New Caledonia. Coquillett (1901) recorded this species from Galapagos Is., Albe-marle I., off *Diomedea irrorata* Salvin. Bequaert (1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., p. 133, and 1933, Psyche, Camb., Mass., XL, p. 103) recorded it from Galapagos Is., Indefatigable I., no host given; Hood I., off *Diomedea irrorata* Salvin; the Marquesas Is.; Society Is., Moorea, and Caroline Is., Ponape. Bequaert (1933) gives the following hosts for this species, *Phaëthon rubricauda* Boddaert, *Sula leucogaster* (Boddaert) and *Anous minutus* Boie.

5. *Olfersia fossulata* Macquart.

Olfersia fossulata Macquart, 1843, Mém. Soc. Sci., Lille, p. 434.

Olfersia fossulata Macquart, Bequaert, 1933, Psyche, Camb., Mass., XL, pp. 102, 105.

Olfersia fossulata Macquart, Bequaert, 1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., p. 132.

The original description was based on a specimen from Brazil without indication of host. Johnson (1924, Zoologica, N.Y., V, p. 91) recorded this species from Galapagos Is., Daphne Major I.,

off *Pelecanus occidentalis* Linn. (*Pelecanus fuscus occidentalis*). This species is parasitic chiefly on tropical marine birds. Coquillett (1901, Proc. Wash. Acad. Sci., III, p. 379) recorded it as *Pseudolfersia fossulata* from Galapagos Is., Wenman I., without indication of host.

6. *Olfersia spinifera* (Leach).*

Feronia spinifera Leach, 1818, Mem. Wern. nat. Hist. Soc., II, p. 557, Pl. XXVI, f. 1-3.

Olfersia spinifera (Leach) Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 220-223, f. 10, 11.

Olfersia spinifera (Leach) Bequaert, 1933, Psyche, Camb., Mass., XL, pp. 102-103.

Olfersia spinifera (Leach) Bequaert, 1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., pp. 132-133.

Alfken (1904, Zool. Jber., Syst., XIX, p. 581) recorded this species from Hawaii off *Fregata minor strumosa* Hartert (*Fregata aquila*). Bryan (1914, Proc. Hawaii ent. Soc., III, p. 15) and Bryan (1917, op. cit., III, p. 273) recorded, without name, a Hippoboscid taken from a sea-bird on the island of Moku Manu (or Bird Island), Hawaiian Is., which in all probability refers to *O. spinifera* (Leach). Johnson (1924, Zoologica, N.Y., V, p. 91) recorded it from Galapagos Is., Tower I., off *Fregata* sp. (*Fregata aquila*). Bryan (1926, Proc. Hawaii ent. Soc., VI, p. 236) recorded a series of *Olfersia spinifera* (Leach), a parasite of Frigate birds, found in abundance on islands visited by the Tanager expedition of 1923, also a specimen from Kauai, Puu Ka Pele. In 1926, Bryan (Bull. Bishop Mus. Honolulu, 31, p. 94) recorded this species from the following islands, off Frigate birds: Laysan I., Lisiansky I., Nihoa I., Necker I., French Frigate Shoals, Johnston I. and Wake I.

Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, p. 46) recorded a specimen from Hawaiian Is., Honolulu, and specimens from Society Is. (Tahiti), Moorea, off *Scaeophæthon rubricauda rothschildi* Mathews (*Phaëton rubricauda*). Curran (1932, Nyt. Mag. Naturv., LXXI, p. 366) recorded it from Galapagos Is., Floreana or Charles I., off *Fregata* sp. Bequaert (1933, loc. cit.) recorded the species from Galapagos Is., Tower I., of *Fregata minor ridgwayi* Mathews, *Fregata* sp. and off an unknown host, also from Nihoa I. (near Hawaiian Is.) and the British Solomon Is. without

* Austen (1902, Ann. Mag. Nat. Hist., [7], XII, p. 266) recorded this species from Christmas I., off 'Sula sula' but as it is doubtful whether it refers to Christmas I. in the Indian Ocean or the one in the Pacific I have not included the record.

indication of definite hosts. *O. spinifera* (Leach) is a common parasite of *Fregata* spp. (Frigate or man-o'-war birds in the Pacific and Atlantic Oceans. Bryan (1934, Proc. Hawaii ent. Soc., VIII, p. 458) includes the species in his list of Hippoboscidae recorded from the Hawaiian Is. and in 1935 (op. cit., IX, p. 42) recorded it from Manana (Rabbit I.), north of Oahu.

7. *Myiophthiria reduvioides* Rondani.

Myiophthiria reduvioides Rondani, 1875, Ann. Mus. Stor. nat.

Genova, VII, p. 464; 1878, op. cit., XII, p. 154.

Myiophthiria reduvioides Rondani, Speiser, 1904, Ann. Mus. Stor. nat. Genova, XLI, pp. 349-350.

Myiophthiria reduvioides Rondani, Ferris, 1925, Philipp. J. Sci., XXVIII, pp. 337-338, f. 5.

Myiophthiria reduvioides Rondani, Austen, 1926, Parasitology, XVIII, pp. 359-360.

Myiophthiria reduvioides Rondani, Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 218-219, f. 9.

Rondani's original description was based on material from Sarawak. In 1878 Rondani recorded specimens from Fiji, Viti, off *Collocalia fuciphaga vanikorensis* (Q. and G.) (*Collocalia vanikorensis*) and *E. fuliginosus* (a bat)—the latter host is undoubtedly accidental. Austen (1926) recorded this species from Fiji, near Suva, in a cave, on *Collocalia francica assimilis* Streseman. Ferris (1927) recorded it from New Hebrides, Hog Harbour, off *Collocalia fuciphaga vanikorensis* (Q. and G.) (*Collocalia francica vanikorensis*). Bau (1929, Zool. Anz., LXXXV, p. 11) recorded the species off *Collocalia fuciphaga vanikorensis* (Q. and G.) (*Collocalia vanikorensis* Quoy and G. Voy.).

8. *Pseudolynchia maura* (Bigot).

Olfersia maura Bigot, 1885, Ann. Soc. ent. Fr., (6), V, p. 237.

Lynchia maura (Bigot), Ferris, 1925, Philipp. J. Sci., XXVII, pp. 416-417, f. 2, 3.

Pseudolynchia maura (Bigot), Bequaert, 1925, Psyche, Camb., Mass., XXXII, pp. 273-274.

Swezey (1912, Proc. Hawaii ent. Soc., II, p. 188) recorded two specimens, without name, obtained by a Hawaiian pigeon-fancier. Ehrhorn (1913, op. cit., II, pp. 206-207) recorded the abundance of a pigeon-fly at a certain place in Honolulu and noted that this fly had become very common in Honolulu. Knab (1916, Insec.

Inscit. menst., IV, p. 3) recorded *P. maura* (Bigot) from the Hawaiian Is. Bryan (1917, op. cit., III, p. 272) recorded the parasite by name and added that it was then very common on pigeons in Honolulu. Bequaert (1925, loc. cit.) recorded the species from domestic pigeons in the Hawaiian Is. Bryan (1934, Proc. Hawaii ent. Soc., VIII, p. 458) included the species in his list of Diptera occurring in the Hawaiian Is., with the following remark: 'general—about pigeons.'

9. *Microlynchia pusilla* (Speiser).

Lynchia pusilla Speiser, Zeit. syst. Hym. Dipt., II, pp. 157-158.

Microlynchia pusilla (Speiser), Ad. Lutz, Neiva and da Costa Lima, 1915, Mem. Inst. Osw. Cruz., VII, p. 185, Pl. XXVII, f. 6, and Pl. XXVIII, f. 6.

Microlynchia pusilla (Speiser), Ferris, Canad. Ent., 1930, LXII, pp. 66-67, f. 3, 4.

Bequaert (1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., p. 135) recorded this species from Galapagos Is., Hood I., off *Buteo galapagoensis* (Gould).

10. *Lynchia albipennis* (Say).

Olfersia albipennis Say, 1823, J. Acad. nat. Sci. Philad., III, p. 101.

Olfersia albipennis Say, Swenk, 1916, J.N.Y. ent. Soc., XXIV, pp. 126-128.

Say's original specimen was collected off *Ardea herodias* Linn., probably in Eastern Nebraska, U.S.A.

Under the name '*Ornithoponus intertropicus*' (not of Walker), Johnson (1924, Zoologica, N.Y., V, p. 91) recorded this species from Galapagos Is., Indefatigable I., Seymour Bay, off *Butorides sundevalli* Reichenow. Bequaert (1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., pp. 134-135) recorded the species as follows: Galapagos Is., Narborough I., off *Ardea herodias cognata* Bangs; James I., no host given; N. Seymour I., no host given; Tower I., off *Nyctanassa violacea pauper* (Sclater and Salvin).

11. *Lynchia nigra* (Perty).

Hippobosca nigra Perty, 1833, Delectus Anim. Artic. Brazil, III, p. 190, Pl. XXXVII, f. 15.

Ornithomyia intertropica Walker, 1849, List. Dipt. Brit. Mus., IV, p. 1144.

Olfersia arcata Speiser, 1902, Zeit. syst. Hym. Dipt., II, pp. 149-151.

Lynchia intertropica (Walker) Ferris, 1930, Canad. Ent., LXXII, p. 69, f. 513, C. & H.

Lynchia nigra (Perty), Bequaert, 1933, Psyche, Camb., Mass., XL, pp. 70, 79.

Perty's specimen came from Brazil but he gave no indication of the host. Walker's species, considered by Bequaert (1933) to be a synonym of Perty's *Lynchia nigra*, was described from specimens from the Galapagos Is., without indication of host. Speiser described the species *O. arcata* on the basis of a single specimen from the Hawaiian Is., Molokai, without indication of host. At the same time Speiser received additional material from the Hawaiian Is. (Fauna Hawaiiensis, 1902, III, pp. 87-89; see also Grimshaw, op. cit., p. 77) and the following host and localities were given: Hawaiian Is., Kona, off 'Short-eared Owl,' and Lanai. As pointed out by Bequaert, it is interesting to note that Speiser (Fauna Hawaiiensis, 1902, p. 87) claimed that the type, from Molokai, was found on a Frigate-bird, *Fregata aquila*, a statement not made in his previous paper. Austen (1903, Ann. Mag. nat. Hist., (7), XII, p. 264) recorded a specimen from 'ear of an owl' from Hawaiian Is., Honolulu, as *Ornithomyia intertropica* Walker (see also Bull. ent. Res., 1911, p. 172). Under the name '*Ornithoponus americanus*' (not of Leach) Johnson (1924, Zoologica, N.Y., V, p. 91) recorded this species from Galapagos Is., Indefatigable I., Seymour Bay, off *Buteo galapagoensis* (Gould), and Curran (1932, Nyt. Mag. Naturv., LXXI, p. 366) recorded it from Indefatigable I., Santa Cruz, without indication of host. Bequaert (1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., p. 134) recorded the species from Indefatigable I., off *Buteo galapagoensis* (Gould).

12. *Lynchia samoana* Ferris.

Lynchia samoana Ferris, 1927, Insects of Samoa, Pt. VI, fasc. 1, pp. 17-19, t.f. 5, 6.

Ferris' original material was taken from Samoa, Upolu, Malo-
lolelei, off *Turdus samoensis* Tristr. (*Merula samoensis*) and *Sub-
myiagra vanikorensis* (Q. and G.) (*Myiagra vanicorensis*).

13. *Ornitheza metallica* (Schiner).

Ornithomyia metallica Schiner, 1864, Fauna Austriaca, II, p. 646.

Ornithomyia noumeana Bigot, 1885, Ann. Soc. ent. Fr., (6), V, p. 240.

Ornithomyia aenescens Bigot, 1885, Ann. Soc. ent. Fr., (6), V, pp. 244-245.

Ornithoeza metallica (Schiner), Massonat, 1909, Ann. Univ. Lyon, N.S. (1), t. 28, pp. 200-295, Pl. I, f. 11-12.

Ornithoeza metallica (Schiner), Ferris, 1925, Philipp. J. Sci., XXVII, pp. 419-420, f. 5 (♀ only).

Ornithoeza metallica (Schiner), Ferris, 1927, Insects of Samoa, Pt. VI, fasc. 1, pp. 14-16, f. 3, 4 (♂).

Ornithoeza metallica (Schiner), Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 213-214, f. 6.

The two species described by Bigot (1885) and listed above as synonyms of *O. metallica* (Schiner) came from New Caledonia. *O. aenescens* Bigot was described without indication of host, whereas *O. noumeana* was taken from an '*Alcedo*.' Under the name *Ornithomyia varipes* Speiser (1902, Fauna Hawaiiensis, III, pp. 89-91) recorded the species from Hawaii, Molokai. Austen (1903, Ann. Mag. nat. Hist., (7), XII, p. 262) also recorded the specimen referred to by Speiser (1902). Bryan (1934, Proc. Hawaii ent. Soc., VIII, p. 458) included Speiser's record in his list. The species recorded by Speiser and Austen is definitely not the true '*varipes*' of Walker (1849) and in all probability refers to *O. metallica* (Schiner). Ferris (1927, p. 14) records this species from Samoa, Upolu, Vailima, off *Aplonis tabuensis brevirostris* (Peale) (*Aplonis brevirostris*), and from New Hebrides, Espiritu Santo and Tanna, off *Sauropatis juliae* H. (*Halcyon juliae*). Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, p. 31) recorded it from Loyalty Is., Maré, Netché and New Caledonia, Oubatché.

Subfamily ORNITHOICINAE.

14. *Ornithoica pusilla* (Schiner).

Ornithomyia pusilla Schiner, 1868, Reise der Oesterreichischen Fregatte Novara um die Erde, etc., II, 6, p. 374.

Ornithoica pusilla (Schiner), Speiser, 1900, Ann. Mus. Stor. nat. Genova, XX, p. 559.

? *Ornithoica confluenta* var. *peroneura* Speiser, 1902, Fauna Hawaiiensis, III, pp. 91-92. (See also Grimshaw, op. cit., p. 77.)

Ornithoica pusilla (Schiner), Speiser, 1904, Zeit. syst. Hym. Dipt., IV, p. 86.

Ornithoica promiscua Ferris & Cole, 1922, Parasitology, XIV, pp. 202-205, f. 19-20.

Ornithoica promiscua Ferris & Cole, Ferris, 1927, Insects of Samoa, Pt. VI, fasc. 1, p. 11.

Ornithoica pusilla (Schiner), Ferris, 1927, op. cit., pp. 11-14, f. 1, 2.

Ornithoica pusilla (Schiner), Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 207-209, f. 1.

Ornithoica pusilla (Schiner), Ferris, 1929, Canad. Ent., LXI, pp. 284-285, f. 2D, 4A.

Schiner's (1868) original specimen was taken in the Society Is. (Tahiti), off *Todiramphus veneratus veneratus* (Gm.) (*Halcyon veneratum*). Speiser's var. *peroneura* of '*Ornithoica confluenta* Say' is probably the same as *O. pusilla* (Schiner) (Dr. J. Bequaert in litt.). His records are as follows: Hawaiian Is., Kona, off 'Short-eared Owl' and off *Vestiaria coccinea* (Forster); another record from the Hawaiian Is., without exact locality, taken off *Chlorodrepanis virens stejnegeri* (Wilson) (*Himatione stejnegeri*). Speiser (1904) recorded a specimen, without indication of host, from Samoa. Aldrich (1923, Insec. Inscit. Menst., XI, p. 79) recorded the species from *Sauropatis pealei* (F. & H.) (*Halcyon tutuila*), Samoa, Tutuila. Ferris (1927) gives the following localities and hosts: Samoa, Upolu, Malololelei, off *Submyiagra vanikorensis* (Q. and G.) (*Myiagra vanicorensis*); Apia, off *Demiegretta sacra* (Gm.), *Aplonis atrifusca* (Peale) and an undetermined host; New Hebrides, Espiritu Santo and Tanna, off *Sauropatis juliae* H. (*Halcyon juliae*).

15. *Ornithoica stipituri* (Schiner).

Ornithomyia stipituri Schiner, 1868, Reise der Oesterreichischen Fregatte Novara um die Erde, etc., II, 6, p. 374.

Ornithoica stipituri (Schiner), 1904, Zeit. syst. Hym. Dipt., IV, p. 86.

Schiner (1868) described this species on the basis of a specimen taken in New South Wales from *Stipiturus malachurus* (Shaw). Speiser (1904) recorded it from New Britain off *Sauromarptis tyro* (Gray) (*Sauromarptes tyro*) and *Macropygia (Dicruopsis) cacomantis*.

16. ? *Ornithoica* sp.

Bryan (1921, Proc. Hawaii ent. Soc., IV, p. 454) recorded ? *Ornithoica* sp. on the basis of a specimen reared from a puparium found on the neck feathers of a pheasant, Hawaiian Is., Kauai.

Fullaway (1932, op. cit., VIII, p. 6) recorded a Hippoboscid, without name, from pheasants in Hawaii. Bryan (1934, op. cit., VIII, p. 458) lists the species in his check-list of the Diptera of the Hawaiian Is. These may refer to *O. pusilla* (Schiner) (Dr. Bequaert in litt.).

HOST-PARASITE SUMMARY.

FAMILY OF BIRDS.	HOST.	PARASITE.
Treronidae.	<i>Ptilinopus perousii perousii</i> Peale.	<i>O. plicata</i> (v. Olfers).
Didunculidae.	<i>Didunculus strigirostris</i> Jardine.	<i>O. plicata</i> (v. Olfers).
Diomedeidae.	<i>Diomedea irrorata</i> Salvin.	<i>O. aenescens</i> (Thomson).
Laridae.	<i>Anous minutus</i> Boie.	<i>O. aenescens</i> (Thomson).
Ardeidae.	<i>Nyctinassa violacea pauper</i> (Sclater and Salvin).	<i>I. albipennis</i> (Say).
	<i>Butorides sundevalli</i> Reichenow.	<i>L. albipennis</i> (Say).
	<i>Demiegretta sacra</i> (Gm.).	<i>O. pusilla</i> (Schiner).
	<i>Ardea herodias cognata</i> Bangs.	<i>L. albipennis</i> (Say).
Sulidae.	<i>Sula leucogaster</i> (Bodd.).	<i>O. aenescens</i> (Thomson).
Fregatidae.	<i>Fregata minor strumosa</i> Hartert.	<i>O. spinifera</i> (Leach).
	<i>Fregata minor ridgwayi</i> Mathews.	<i>O. spinifera</i> (Leach).
	<i>Fregata</i> spp.	<i>O. spinifera</i> (Leach).
Pelecanidae.	<i>Pelecanus occidentalis</i> Linn.	<i>O. fossulata</i> Macquart.
Phaethontidae.	<i>Scaeophaëthon rubricauda</i> <i>rothschildi</i> Mathews.	<i>O. spinifera</i> (Leach).
Aquilidae.	<i>Buteo galapagoensis</i> (Gould).	{ <i>L. nigra</i> (Perty).
	<i>Circus juxta wolfe</i> Gurney.	{ <i>M. pusilla</i> (Speiser).
	<i>Todiramphus v. veneratus</i> (Gm.).	<i>O. plicata</i> (v. Olfers).
	<i>Sauromarptis tyro</i> (Gray).	<i>O. pusilla</i> (Schiner).
	<i>Sauropatis juliae</i> H.	<i>O. stipituri</i> (Schiner).
	<i>Sauropatis pealei</i> (F. & H.)	{ <i>O. metallica</i> (Schiner).
	<i>Collocalia francica assimilis</i> Stresemann.	{ <i>O. pusilla</i> (Schiner).
	<i>Collocalia fuciphaga vanikorensis</i> (Q. and G.).	<i>O. pusilla</i> (Schiner).
	<i>Collocalia fuciphaga vanikorensis</i> (Q. and G.).	<i>M. reduvioides</i> Rondani.
	<i>Collocalia fuciphaga vanikorensis</i> (Q. and G.).	<i>M. reduvioides</i> Rondani.
Muscicapidae.	<i>Submyiagra vanikorensis</i> (Q. and G.).	{ <i>L. samoana</i> Ferris.
	<i>Turdus samoensis</i> Tristr.	{ <i>O. pusilla</i> (Schiner).
	<i>Vestiaria coccinea</i> (Forster).	<i>L. samoana</i> Ferris.
	<i>Chlorodrepanis virens stejnegeri</i> (Wilson).	<i>O. pusilla</i> (Schiner).
	<i>Chlorodrepanis virens stejnegeri</i> (Wilson).	<i>O. pusilla</i> (Schiner).
Graculidae.	<i>Aplonis tabuensis brevirostris</i> (Peale).	<i>O. metallica</i> (Schiner).
	<i>Aplonis atrifusca</i> (Peale).	<i>O. pusilla</i> (Schiner).
Unplaced.	' <i>Macropygia (Dicruropsis)</i> <i>cacomantis</i> .'	<i>O. stipituri</i> (Schiner).

ANALYSIS OF THE RECORDS.

Marquesas Is.				+											
Society Is.				+		+								+	
Samoa.			+								+		+		
Fiji Is.	+		+				+								
Tonga Arch.			+												
Loyalty Is.												+			
New Caledonia.	+		+	+								+			
New Hebrides.	+		+			+						+	+		
Duke of York I.															
Brit. Solomon Is.						+									
New Britain.															+
Caroline Is.			+	+											
Nikoa I.						+									
Lisiansky I.						+									
French Frigate Shoals.						+									
Laysan I.						+									
Wake I.						+									
Johnston I.						+									
Necker I.						+									
Hawaiian Is.		+				+		+			+		+	+	
Galapagos Is.				+	+	+			+	+	+				
Species of Hippoboscidae.	1. <i>Hippobosca equina</i> Linn.	2. <i>Melophagus ovinus</i> (Linn.)	3. <i>Ornithoeca plicata</i> (v. Olfers)	4. <i>Olfersia aenescens</i> C. G. Thomson ...	5. <i>Olfersia foveolata</i> Macquart	6. <i>Olfersia spinifera</i> (Leach)	7. <i>Myiophthiria reduvioides</i> Rondani	8. <i>Pseudolynchia maura</i> (Bigot)	9. <i>Microlynchia pusilla</i> (Speiser)	10. <i>Lynchia albipennis</i> (Say)	11. <i>Lynchia nigra</i> (Perty)	12. <i>Lynchia samoana</i> Ferris	13. <i>Ornithoeca metallica</i> (Schiner)	14. <i>Ornithoeca pusilla</i> (Schiner)	15. <i>Ornithoeca stipituri</i> (Schiner)

APPENDIX.

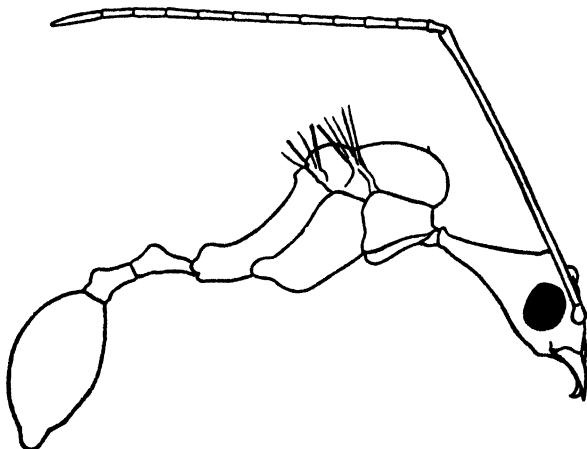
Since writing the above paper a further reference to Hippoboscidae recorded from a Pacific Island has come to my notice and for the sake of completeness I am including it.

Jepson (1911, Rept. Econ. Entom., Dept. Agric. Fiji, Council Paper 25, p. 27) recorded four species of Hippoboscidae from Fiji: '*Ornithoctona australasiae* F. off Wild Fowl, *Ornithoica pusilla* (Schin.) off hawk and two undetermined species from a parrot and a pigeon.'

53 Arodene Road, London, S.W.2.

September 30th, 1937.

SOME ANTS OF THE SUBGENUS *PLANIMYRMA* VIEHMEYER OF THE GENUS *APHAENOGASTER* MAYR: SUPPLEMENTARY NOTE.



Profile of ♂ of *Alphaenogaster* (*Deromyrma*?) *dromedarius* Emery?
(see page 32).

The drawing for a text-figure of this subspecies, intended to accompany the description on p. 31 *antea*, was unfortunately lost in the Christmas post. A new drawing has been made, and the text-figure is issued herewith.—ED.

Cis bilamellatus Wood at Sherwood Forest.—In October last year I took a number of specimens of *Cis bilamellatus* in Sherwood Forest out of fungus growing on birch.—S. O. TAYLOR, 34 Nelson Street, Leicester: February 14th, 1938.

[The range of this interesting little beetle in England continues to extend. My friend Mr. E. Aubrook, of the University Museum (Department of Entomology), informs me that it was met with rather freely by Mr. E. W. Jones in fungus at Watlington, Oxon.—J.J.W.]

THE BRITISH SPECIES OF *ACRITUS* LEC. (COL. HISTERIDAE).

BY K. G. BLAIR, D.SC., F.R.E.S.

In May last Mr. P. Harwood sent me some specimens of an *Acritus* that was unknown to him and that had been determined by Mr. B. S. Williams as probably *A. rhenanus* Fuss. This determination I was able to verify by means of the key in Reitter's *Fauna Germanica* and by comparison with specimens in the collection of the late George Lewis. Further comparison with the type of *A. homoeopathicus* Woll., from Madeira, confirmed the identity given in Junk's *Col. Cat.* of these two species.

This led to an investigation of the two reputed species on the British list, *A. minutus* Herbst and *A. nigricornis* Hoffm. Of the latter there was no example in the Power Collection, nor in that of the late G. C. Champion, but a single specimen in the Sharp Collection was of the species just sent by Mr. Harwood, and was certainly not *nigricornis* of Continental authors; neither did it agree with the description given by Fowler. Further, the *minutus* of Fowler and of British collections is not the *minutus* Herbst of Continental writers, but is their *nigricornis* Hoffm. Turning again to Fowler's somewhat inadequate and unsatisfactory descriptions of these two species, I can only conclude that they are really only one and the same, viz. *nigricornis* Hoffm. (= *minutus* Paykull, nec Herbst). This species only is recognised by Joy (1932).

Then in January, 1938, Mr. G. H. Ashe produced yet another species of the genus, recently taken by him at Hartlebury, Worcs., and identified by Mr. Donisthorpe as *A. atomarius* Aubé.

The following key will, I think, be of use for the recognition of the four British species of the genus:—

1. (4). Thorax with no crenulate line before base; colour dark ferruginous.
2. (3). Scutellum exposed; anterior tibiae strongly expanded, external margin spinulose; form somewhat oblong; upper surface distinctly though sparsely punctate (s.gen. *Halacritus* Schm.) *punctum* Aubé.
3. (2). Scutellum concealed; anterior tibiae slightly thickened towards apex, not spinulose; upper surface almost impunctate; size smaller (s.gen. *Aeletes* Horn) *atomarius* Aubé.
4. (1). Thorax with distinct crenulate line (line of punctures) before base, this line arched forward from base in middle; upper surface rather strongly punctate (*Acritus* s.s.).
5. (6). Upper surface shining, not strigose between punctures; colour, including antennal club, ferruginous *nigricornis* Hoffm. (= *minutus* Payk., nec Herbst).
6. (5). Upper surface rather dull, strigose between punctures; legs slender; colour dark piceous *homoeopathicus* Woll. (*rhenanus* Fuss.).

A. punctum is a maritime species, occurring on the sand and under seaweed just above high-water mark. The record in Fowler, *Suppl.*, from Gumley, Leicestershire (*Matthews*) is remarkable.

(N.B.—*Halacritus* Schmidt. is sometimes ranked as a distinct genus, but I follow Bickhardt, in Junk, Col. Cat., in regarding it as a subgenus of *Acritus*).

Localities. Hayling Island, Bembridge, Chesil Bank, Whit-sand Bay, Tregantle (Donisthorpe), Weston-super-Mare.

A. atomarius was found by Mr. Ashe in the burrows of *Dorcus parallelipedus*. On the Continent it is found in the runs of the tree-nesting ant, *Lasius brunneus*.

Localities. Hartlebury, Worcs. (G. H. Ashe). An *Acritus* found in a *Dorcus* burrow in Windsor Forest by Mr. Donisthorpe, but unfortunately lost, was probably this species.

A. nigricornis, our commonest and most widely distributed species, occurs in haystack refuse, rotten vegetation, hotbeds, etc.

Localities. YORKS; Scarborough: LANCs; Southport, Birkdale: LINCs; Spridlington: NOTTS; Retford, Burton-on-Trent: CAMBS; Cambridge: OXFORD; Oxford: BERKS; Wytham Park, Bradfield, Windsor: MIDDx; Hendon: SURREY; Esher, Weybridge, Shirley, Wokingham, Mickleham: KENT; Crystal Palace, Eltham, Sheppey, Whitstable, Deal: SUSSEX; Rye: CORNWALL; Scilly Isles: WALES; Llandudno: IRELAND; Down, Armagh, Dublin.

The name of this species is misleading. Schmidt, Best.-Tab. europ. Col., 1885, retained it as distinct from *seminulum* Küst., which has yellow antennae, but all modern writers appear to agree that they are the same.

The species is very variable, the punctures on the posterior part of the elytra being frequently more or less sharply produced into longitudinal lines, not to be confounded with the longitudinal strigosity between punctures that is found in *homoeopathicus*. Traces of the oblique striae towards the elytral shoulders characteristic of the Histeridae are often visible, sometimes deeply impressed, var. *sulcipennis* Fuss. Specimens of this variety, apparently taken in company with the typical form, from Eltham and Shirley are in Dr. Sharp's collection.

A. homoeopathicus was found by Mr. Harwood on burnt ground, in company with *Micropeplus tesseraula*, possibly attached to the reddish fungus, *Pyronema confluens* (Discomycetes) commonly occurring in such situations.

Localities. Crichel, Dorset (Harwood); Claygate Lane (Sharp).

Examples of both of these notable additions to our fauna have been presented by their respective captors to the National Collection, and it is at their joint request that this note is written.

Dept. of Entomology,

British Museum (Natural History), S.W.7.

February 14th, 1938.

ON THE XANTHOLINID GENERA, *THYREOCEPHALUS* GUÉR. AND
EULISSUS MANNH. (COL. STAPHYLINIDAE).

BY W. O. STEEL.

The two genera *Thyreocephalus* Guér (1844) and *Eulissus* Mannh. (1830) are very closely related and the species have been confused.

The generic distinction lies in the labrum, which in *Eulissus chalybeus* Mannh. (genotype) is bilobed and only in part strongly chitinated, the rest being weak and semi-transparent. In *Thyreocephalus jekeli* Guér. (genotype), however, the whole of the labrum is strongly chitinated, and it is multidentate. Those species having the *E. chalybeus* form of labrum are at present only known from Central and South America, and *Eulissus* appears to be restricted to this region. All the species from other parts of the world described as *Eulissus* have the labrum of the wholly chitinated form, though varying considerably in shape, and should be transferred to *Thyreocephalus*.

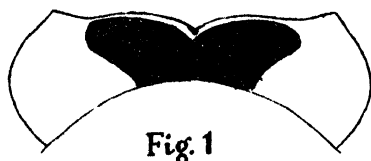


Fig. 1



Fig. 2

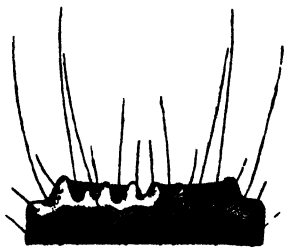


Fig. 3

Labrum of—Fig. 1, *Eulissus chalybaeus* Mann.; Fig. 2, *Thyreocephalus chloropterus* Er.; Fig. 3, *T. albertisi* Fauv.

The genus *Dinoxantholinus* (1910) was described by Heller without any reference to his *Indoscitalinus* (1900), which is known to be a synonym of *Thyreocephalus*. The genotype, *D. prodigiosus*, a specimen of which I have seen, only differs from *Thyreocephalus* in the shape of the labrum, and as this is variable in this genus, I can see no justification for regarding *Dinoxantholinus* as distinct.

Sharp (Biol. Cent. Amer., Vol. I, Part 2, p. 499) notes that two of his own species of *Linidius* Shp. (1876), *L. extremus* and *L.*

tenuipes, should be transferred to *Thyreocephalus*, but leaves the third species *L. recticollis* Shp. in *Linidius*. I have examined the type specimen of this and can see no reason why it should not be included in *Thyreocephalus*. The only difference between it and the two species noted above is in the shape of the head, and this is not a generic character.

We thus obtain the following synonymy :—

Thyreocephalus Guér.

= *Indoscitalinus* Heller.

= *Linidius* Shp. (n. syn.).

= *Dinoxantholinus* Heller (n. syn.).

NOTE.—In Figs. 1 and 2 the labral setae have been omitted.

16 Upsdell Avenue, London, N.13.

February, 1938.

ON *PHALACRUS NIGRINUS* (MARSHAM 1802).

BY J. BALFOUR-BROWNE.

This species was described in *Coleoptera Britannica*, page 77, as No. 54, *Dermestes nigrinus*. It is listed in the *Coleopterorum Catalogue*, Junk-Schenkling, Pars 79, *Hydrophilidae*, Knisch, as a doubtful synonym of *Limnebius truncatellus* Thunberg. The type and only specimen, a badly damaged individual in which the abdomen is missing and one elytron is detached, is in the Stephensian collection in the British Museum standing over a label *Cercyon nigrinum*. Examination shows the specimen to belong to the Clavicorn family *Phalacridae*, and to be the *Phalacrus caricis* Sturm 1807, Stephens 1829. Marsham's description has five years priority over that of Sturm and the species is therefore to be known as:—

Phalacrus nigrinus (Marsham).

caricis Sturm.

millefolii Gyllenhal.

Department of Entomology,

British Museum (Natural History).

February 15th, 1938.

A NEW *CHIROTHRIPS* (THYSANOPTERA) FROM CYPRUS.

BY J. DOUGLAS HOOD

(Cornell University).

The following description is a by-product of a revisional study of the North American species of a genus that is so distinctive as to have no synonyms, and to which no species has ever been re-

ferred from another genus. The present new species is very different in structure and coloration from all of its Old World congeners, but quite closely resembles, and is indeed related to, a species that occurs in the south-eastern United States, and with which I at first confused it.

***Chirothrips cypristes* sp. nov. (Fig. 1).**

Female (macropterous). Length about 1.1 mm. (fully distended, about 1.2 mm.). Colour yellow ochre, with head brown, thorax nearly orange, more brilliant, and obscurely shaded with grey, abdomen paler, tipped with blackish and often distinctly shaded along posterior margin of segment IX; antennae with segment I yellowish brown and paler than head, II and III paler than I and greyish yellow, IV darker than II and III and greyish brown, V—VIII brown or dark greyish brown and nearly or quite concolorous with head; legs yellow, the middle and hind pairs often very lightly shaded along outer surface; wings pale yellowish grey, scarcely lighter at base, the veins in fore wings grey but much paler than the single post-median vein in hind wings; all setae pale and somewhat yellowish; ocellar pigmentation crimson red.

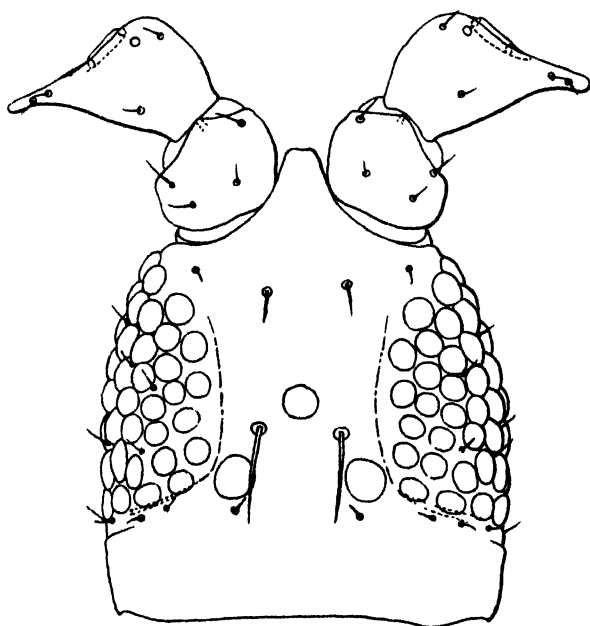


FIG. 1.—*Chirothrips cypristes* sp. nov. Head and segments I and II of antennae, female, paratype (NaOH-treated; drawn by the author; camera lucida).

Head (Fig. 1) about 1.15 times as long as greatest width and about two-thirds as long as pronotum, scarcely produced in front of eyes, surface nearly smooth, frontal costa rounded and not concave; front with only two pairs of

small setae, equally spaced and usually forming a transverse row about on a line with front margins of eyes, though sometimes with the larger median pair more posterior, as in the specimen figured; *interocellar setae unusual in position, always arising about on a line tangent to outer margins of ocelli*, their length about 27μ ; one pair of very minute setae close to, and directly behind, posterior ocelli, three just behind eyes, and a somewhat longer lateral pair on the same transverse line. *Eyes* scarcely 0.6 the length of head, somewhat longer on dorsal than on ventral surface, measuring (in μ) as follows in one paratype: dorsal length 64, dorsal width 29, dorsal interval 42, ventral width 25, ventral interval 52. *Ocelli* normal, the median one smaller, about 9μ in diameter, and 58μ from anterior end of head, the posterior pair 12μ in diameter, 23μ apart, and 16μ from median ocellus. *Antennae* normal; segment I not enlarged; II strongly concave on outer surface, its outer apical angle acute, prolonged, and without a terminal seta or sense-cone, median length of segment 30μ , length of outer surface 43μ , maximum diagonal length 51μ , distance from tip of projection to pedicel of III, 26μ ; III and IV with outer surface more bulging than inner surface, their sense-cones short, stout, and simple; VIII distinctly longer than VII. *Mouth-cone* typical, broadly rounded, extending about 80μ beyond posterior dorsal margin of head.

Prothorax about 1.5 times as long as head and only 1.2 times as broad as long; pronotum with the anastomosing lines of sculpture distinct, pale, and continuous, not broken up into scallops, the two pairs of setae at posterior angles about 40μ , other setae about as usual. *Pterothorax* normal in form and chaetotaxy, less than 1.2 times as broad as prothorax. *Legs* of fore pair with the femora not at all deeply sinuate on outer surface at apex. *Wings* straight, the fore pair typically with 4+3 setae near base of anterior vein and 1+1+1 beyond, the hind vein with 5 or 6.

Abdomen broader than pterothorax, its faint sculpture scarcely visible except in caustic-treated specimens, the subbasal chitinous line on terga and sterna broken into delicate, nearly straight scallops; segment X not elongated or acute, its length about 69μ , its greatest subbasal width about 55μ ; chaetotaxy normal; segment IX with setae 1-3 about $93, 130$, and 112μ , respectively, and X with 1 and 2 about 110 and 100μ , respectively.

Measurements of female (holotype), in mm.: Length about 1.09 (distended, 1.24); head, length 0.113, width across eyes 0.100, greatest width across cheeks 0.098, length in front of eyes 0.029, length of cheeks 0.024, interval between bases of antennae 0.011; prothorax, median length of pronotum 0.170, greatest width 0.204; mesothorax, greatest width 0.234; metathorax, greatest width 0.199; fore wings, length 0.763, width at middle 0.037; abdomen, greatest width 0.246.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	...	21	30	31	30	24	36	9 13
Width (μ)	...	36	—	24	24	21	20	7 5

Total length of antenna 0.194 mm.

Male (brachypterous). Length about 0.9 mm. (distended, about 1.0 mm.). *Colour* almost wholly lemon-yellow, with sides of metathorax inclining toward ochraceous, with segment V of antennae lightly shaded with grey, and segments VI—VIII light brown; oceller pigmentation bright red; testes dark ochre. Structure essentially as in female, the head scarcely produced in front of eyes, but the interocellar setae, while always posterior to median ocellus, a

trifle more lateral in position and arising just outside a line tangent to outer margins of ocelli, their length about 18μ ; antennae relatively stouter, segment II less prolonged, its median length about 27μ , length of outer surface 35μ , maximum diagonal length 42μ , distance from tip of projection to pedicel of III, 18μ ; setae at posterior angles of pronotum $24-27\mu$; wings short, extending beyond middle of tergum I of abdomen, about 120μ long; abdomen sculptured as in female, glandular areas on sterna III—VII rounded and somewhat transverse, measuring 30 by 50μ in one specimen, lateral setae on segment IX about 76μ .

Measurements of male (allotype), in mm.: Length about 0.88 (distended, 0.96); head, length 0.094, width across eyes 0.088, greatest width across cheeks 0.089, length in front of eyes 0.023, length of cheeks 0.017, interval between bases of antennae 0.009; eyes, dorsal length 0.054, dorsal width 0.025, dorsal interval 0.038; median ocellus, diameter 0.007, distance from front of head 0.047; posterior ocelli, diameter 0.009, interval 0.022, distance from median ocellus 0.013; mouth-cone, length beyond posterior dorsal margin of head 0.074; prothorax, median length of pronotum 0.142, greatest width 0.181; mesothorax, greatest width 0.193; metathorax, greatest width 0.164; abdomen, greatest width 0.206.

Antennal segments :	1	2	3	4	5	6	7	8	
Length (μ)	...	20	27	27	25	19	28	7	11
Width (μ)	...	31	—	24	23	19	19	7	5

Total length of antenna 0.164 mm.

CYPRUS: Cherkas, September 1935, G. A. Mavromoustakis, 'on turf,' 33 ♀♀, 12 ♂♂; holotype, allotype, and paratypes; in the author's collection.

This dainty little species bears some resemblance in colour to *C. xanthius* Hood, *C. obesus* Hinds, and *C. spiniceps* Hood, and virtually duplicates the colour of *C. vestis* Hood—all of them New World species and the only ones in the genus which have yellow abdomens when fully mature. In structure, however, it differs from all of its congeners, excepting *vestis* only, in that the interocellar setae are always situated behind the median ocellus and virtually on the external limits of the ocellar triangle. Under low magnification it is almost inseparable from *vestis*, save only for the more acutely prolonged second antennal segment and the dark-tipped abdomen; but under higher magnifications it is seen to lack the small stout setae which in *vestis* largely clothe the dorsal and ventral surfaces of the head, thorax and basal abdominal segments.

Department of Entomology,
Cornell University, Ithaca, N.Y.
December 10th, 1937.

THE BRITISH SPECIES OF LONCHOPTERA (DIPTERA).

BY J. E. COLLIN, F.R.E.S., ETC.

The Lonchopteridae, with the one Palaearctic genus *Lonchoptera* Mg., have a very distinctive appearance (fig. 1) and an unusual sexual difference in the wing-venation; the anal vein in the male ends with a downward curve in the hindmargin of wing, while in the female it is upcurved and ends in the postical vein some little distance before that vein joins the hindmargin. In the early history of the genus, species (so-called) were separated mainly on differences in the thoracic coloration and markings, characters which have since been proved to be of little value. It was not until de Meijere published an account of his investigations in the Transactions of the Dutch Entomological Society for 1906 that our knowledge of the species was placed upon a sure foundation. A further contribution was made by Duda in 1927 (Konowia VI) when he called attention to some of the distinctive characters in the chaetotaxy of the legs. My study of the genus has brought to light certain weak points in the 'tables' of both de Meijere and Duda, and I offer the following alternative table of the British species, based on characters which in my experience appear to be more reliable.

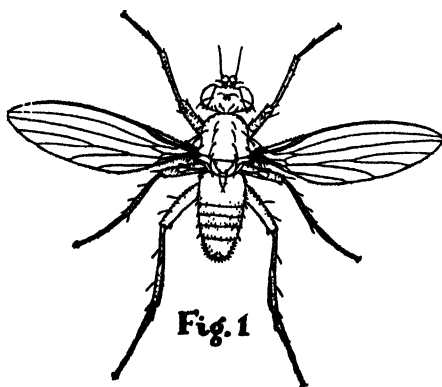


Fig. 1

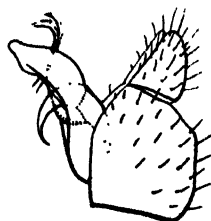


Fig. 2

FIG. 1. *Lonchoptera lutea* Pnz. ♂.

„ 2. *L. scutellata* Strbl. Male hypopygium with genital parts extruded.

TABLE OF BRITISH SPECIES OF LONCHOPTERA.

- 1 (8). No anteroventral bristle to middle tibiae.
- 2 (3). Scutellum intensely black. Vertical bristles and postocular ciliation all pale. Anal vein ending far beyond base of discal fork. Male hypopygium very small (fig. 2) *scutellata* Strbl.
- 3 (2). Scutellum not intensely black. At least middle pair of vertical bristles dark. Anal vein seldom ending much beyond base of discal fork. Male hypopygium large.

- 4 (5). Large dark species with middle tibiae conspicuously bent (concave in front near base) in male, and slightly so in female. Middle tarsi very long, basal joint more than half length of tibia ... *tristis* Mg.
- 5 (4). Smaller species usually yellowish, but if darker middle tibiae not bent and middle tarsi much shorter, with basal joint not more than half length of tibia.
- 6 (7). Antennae all dark. Normally only three bristles above front tibia, approximately at first and second third, and at tip. Male hypopygium longer, reaching to end of third segment, basal part at least pale brownish, usually darker *lutea* Pnz.
- 7 (6). The two basal joints of antennae yellowish. A fourth small bristle normally present on front tibiae close to upper one (as a pair). Male hypopygium shorter, not extending much beyond end of fourth segment, basal part yellow *nitidifrons* Strbl.
- 8 (1). An anteroventral bristle to middle tibiae below middle.
- 9 (10). The last bristle on subcostal vein considerably longer than others and somewhat before end of vein (fig. 4). An anteroventral bristle to four posterior femora beyond middle in addition to preapical.
..... *meijerei* sp.n.
- 10 (9). Bristles on subcostal vein more uniform in size and extending to end of vein, last bristle small like preceding. No anteroventral bristle to four posterior femora except preapical one.
- 11 (12). Usually three bristles above front tibiae in addition to preapical. Vertical bristles pale and postocular ciliation with (at most) only middle bristles of each side dark. Male hypopygium very small and end lamellae, though pubescent, without long bristly hairs (fig. 6). Anal vein ending at most only slightly beyond base of discal fork.
..... *furcata* Flin.
- 12 (11). Only one bristle above front tibiae in addition to preapical. All vertical bristles and postocular ciliation dark. Male hypopygium very large, and end lamellae with especially long bristly hairs (fig. 7). Anal vein ending beyond (in female very much beyond) base of discal fork *nigrociliata* Duda.

L. scutellata Strobl.

Antennae yellow, at most third joint brownish. Thorax tawny-yellow with a median dark band, very narrow on front half but rapidly widening out to width between dorsocentrals on hinder half; sides of thoracic disc also often slightly brownish from extreme front to base of wing. Pleurae yellow. Abdomen darkened down middle and more especially so on hind margins of tergites; the long sixth tergite of male broadly yellow at sides, with side margins curving under and meeting (or almost meeting) below, the basal corners bearing a fringe of long curved hairs. Legs yellow. Front tibiae above with a pair of bristles at basal third and a smaller one at middle. The male genitalia (fig. 2) distinctive, showing greater relationship to *furcata* and *meijerei* than to the other species.

My first capture of this species was a female taken at Barton Mills (Suffolk) on March 31st, 1920; search in the same locality produced further specimens at the end of May, 1933 and 1935. and in August, 1934, I found it in Moccas Park (Hereford).

L. tristis Meigen.

A dark species easily recognised by characters in the middle legs. Head and antennae darkened, bristles dark except those of occipital row. The large male hypopygium dark, with short, pale yellow, terminal lamellae. Third sternite with a pair of spine-like bristles each side near hind margin. Front femora with apical bristles, but without the dorsal bristles usually present near tip. Front tibiae in male with only one bristle above near middle, in female with two bristles at about first and second third. Male middle femora with two tiny bristles beneath near middle, followed by a long bristle, and middle tibiae without the small posterodorsal bristle on basal third present in female.

This species is sometimes present in large numbers in woods in the southern half of England. I have records from Hereford-, Worcester- and Buckingham-shires.

L. lutea Panzer.

Very variable in colour, thorax varying from all yellow to yellow with one stripe, or three dark stripes, or thorax entirely dark. Antennae (or at least second and third joints) black. Internal processes of male genitalia different in shape to those of *nitidifrons*, notably the posterior gonapophyses ('d' of de Meijere's figure) which are not foot-shaped at end as in *nitidifrons*, and in the presence of a two-pointed chitinous plate under the terminal lamellae ('c' of de Meijere's figure), terminal lamellae also bearing little hooked hairs in addition to ordinary bristles.

A very common and widely distributed species.

L. nitidifrons Strobl.

Resembling *lutea*, but differing as given in the table of species. Frons more shining than in *lutea*. Third antennal joint very short. Thorax yellow, with or without a median dark stripe, but always with some darkening at sides above

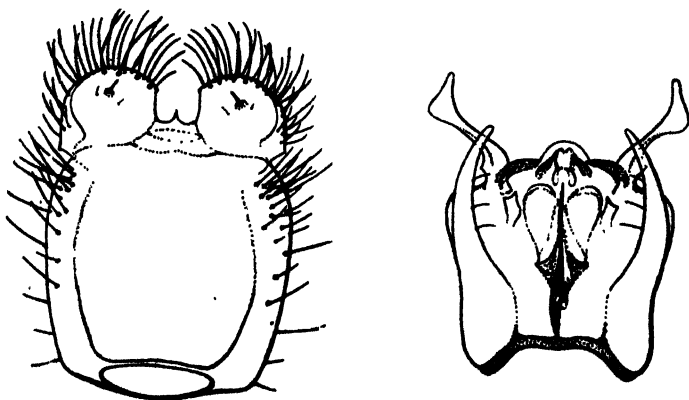


FIG. 3. *L. nitidifrons* Strobl. Male hypopygium with genital parts dissected from outer shell.

base of wings, which does not extend forward beyond suture. A distinguishing feature in the male genitalia is the foot-like tip to posterior gonapophyses (the

processes projecting upwards in figure 3). I have no doubt that this is the species described by Strobl in 1897 in Part IV of his *Dipteren von Steiermark*, p. 221, and since usually placed as a variety of *lutea*. One distinction given by Strobl, the end of anal vein being well before base of discal fork, is not always reliable.

My attention was first called to this species by a male taken by Mr. A. H. Hamm at Brasenose, Oxford, on October 3rd, 1914, but it was not until June 1st, 1935, that I myself found the species at Barton Mills (Suffolk), when on this and the two following days diligent sweeping resulted in a good series being obtained.

***L. meijerei* sp.n. ♂ ♀.**

The male of this species was described by Meijere in his excellent paper on the genus, to which reference has already been made, as the little-known male of *furcata*, but the capture of the true male of *furcata* as well as both sexes of a species evidently conspecific with Meijere's male has proved the distinctness of the latter from *furcata*, and has made it possible, in naming this species, to show some appreciation of Dr. de Meijere's pioneer work on the genus.

L. meijerei is very much like *furcata* but, in addition to the differences given in the table of species, the former has nearly always only one bristle above front tibia in addition to preapical, rarely two (one at first and second third of length from base to tip), and the male hypopygium is rather larger (longer than sixth tergite) and of different structure. In de Meijere's figures of the male genitalia the posterior gonapophyses are shown much more exposed than is normal, and they are really thinner plates than his figure indicates. Praescutellar dorsocentral bristles stronger and the front pair of other three pairs of dorsocentrals also longer (in *furcata* this pair are quite small).

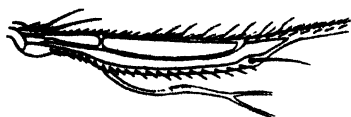


Fig. 4



Fig. 5

FIG. 4. *L. meijeri* sp.n., showing bristling of subcostal vein.

„ 5. *L. impicta* Ztt. Dr. Kemner's sketch from type specimen.

The possibility that this species might be the *L. impicta* of Zetterstedt could not be overlooked. I therefore asked Dr. Kemner of Lund to kindly compare a drawing I sent him of the arrangement of bristles on subcostal vein in *L. meijerei* (fig. 4) with that

in Zetterstedt's type of *impicta*, and he informed me that this latter species differed in having the long bristle at base of the subcostal vein and not at the tip, and sent a sketch which I reproduce (fig. 5). This remarkable character proves that *L. impicta* Ztt. is a very distinct species.

Specimens of *L. meijerei* were first taken by me in August, 1935, on the banks of the river Monnow near Pandy (Herefordshire), but in July, 1936, I again met with the species at Kinrara, near Aviemore (Inverness-shire).

L. furcata Fallen.

There should be no difficulty in naming this species. It varies very much (like *lutea*) in colour, and is quite as common and widely distributed as that species; one usually, however, finds only females; indeed, so rare does the male appear to be on the Continent that it has been seriously suggested that the species must be parthenogenetic, but in Britain Prof. J. W. Carr has taken five males in Nottinghamshire and Mr. H. Britten the same number in



FIG. 6. *L. furcata* Fln. End of male abdomen with penis shown separately and 'B,' genital parts with penis removed, seen from beneath.

Lancashire, while in 1936 I found males at Kinrara, near Aviemore, and obtained seventeen, all taken by sweeping in a marshy piece of ground in the evening. It is possible, therefore, that the male is crepuscular in habits and remains in hiding during that part of the day when people more usually collect Diptera.

The male has a small hypopygium (fig. 6) similar in that respect to the male of *scutellata* and *meijerei*, much smaller than in the other British species. *L. scutellata* is at once distinguished by its very black scutellum, and *meijerei* by the stronger bristle at end of subcostal vein.

L. nigrociliata Duda.

This is a dark species resembling *L. tristis* but very distinct in male owing to its remarkable hypopygium (fig. 7), while the female has a greyer frons and much longer fork to discal vein (its base long before end of anal vein) than in *tristis*, in addition to other differences noted in the table of species.

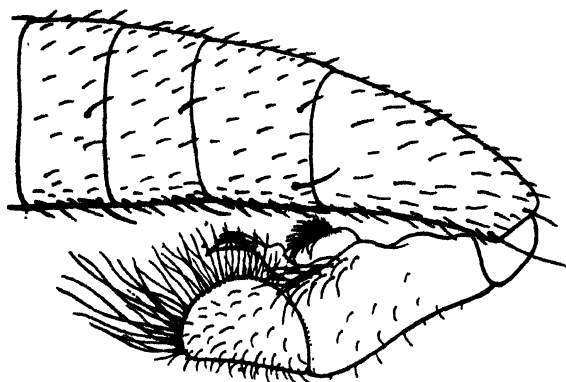


FIG. 7. *L. nigrociliata* Duda. End of male abdomen.

Until this species was found in Britain the only certain record was that of the single male type found near Habelswerdt in Silesia by Duda and described in 1927 (Konowia VI, pp. 93 and 96), though Czerny in 1934 (Lindner's 'Die Fliegen') doubtfully referred a female from E. Siberia to this species.

I caught a pair at Bickleigh (Devon) in May, 1914, and two males and three females in Herefordshire (by the banks of the river Monnow, near Pandy, and at Grosmont) in August, 1934, and have seen a female from Beattock (Dumfriesshire) in the Cambridge University Museum.

Raylands, Newmarket.

January 25th, 1938.

Notes on the nomenclature of the British Corixidae: a correction.—In the February number of this Magazine (*antea*, p. 38) lines 19 and 20 should be transposed so that *prominula* Thoms. 1869 is a synonym of *S. scotti* D. & S. 1868 and not of *S. fossarum* Leach 1818. — W. E. CHINA, British Museum (Natural History), Cromwell Road, London, S.W.7: February 10th, 1938.

Review.

'RECENT ADVANCES IN ENTOMOLOGY.' By A. D. IMMS, M.A., Sc.D., F.R.S.
Second edition. London: J. & A. Churchill Ltd. pp. x + 431, 94 illuſts.,
8vo. Price 15/-. 1937.

The ſubjects choſen for treatment in this work are thoſe which have yielded important reſults in the hands of modern investigators, but have received little attention in the ſtandard text-books. The ſecond edition follows the firſt in its chapter headings, but the text has been carefully reviſed in the light of later work and much additional matter is added, thereby increaſing the length by 58 pages and the price by 2/6.

Its intrinsic merit has doubtleſs ensured that the firſt edition is completely exhausted, and for that reaſon a ſecond edition is admittedly deſirable. Entomologiſts with the firſt edition already on their bookſhelves will, however, regret the neceſſity of buying the ſame material a ſecond time for the ſake of the additional and reſiſional matter. Indeed, if the title 'Recent Advances' is not to be miſleading, the matter included ſhould be comparatively new, and it is the reviewer's opinion that it would have been better to avoid reprinting and to publiſh at intervals, ſay quinquennially, appendices to the original edition; theſe would avoid repetition, and at a moderate price would keep the reader well informed of the progress made in the ſubject during the preceding five years.

The advance made in the various branches of entomology is unequal in extent and importance, and this is reflected in the amount of reſiſion in the various ſections of the book. Thus, although little change has been made in the ſection on wing-venation, the chapters on foſſil inſects have been much modified in order to incorporate the reſults of reſearches by Dr. Tillyard and others. The account of the genitalia is ſhorter and much clearer, while Chapter III includes a diſcuſſion of hormones, probably the moſt important new ſubject in the book. The ſection on ſenſe-organs has been extended to include a review of much recent experimental work on the recognition of form and colour, but the chapter on coloration remains largely in its original ſtate, and, remarkably enough, omits any reference to any of Sir Edward Poulton's work on this ſubject publiſhed later than 1893! The concluding five chapters on various ſubjects of importance to economic entomologiſts have been brought up to date, and together conſtitute the beſt ſhort expoſition of the problems involved and the reſults achieved as yet available. Embryology is not included, but perhaps Dr. Imms conſiders that this is well provided for in the exiſting text-books.

The volume, like the firſt edition, is well written, well produced and well bound, a credit alike to author and publiſher. It is to be regretted, however, that the publiſher has included ſixteen pages of advertisements: it is ſufficiently bulky and heavy without ſuch irrelevant matter.—B.M.H.

Obituary.

James Fairclough Dutton.—We regret to hear of the death on the 15th December laſt of Mr. James F. Dutton, in his ſeventy-eighth year. Long reſident at Helsby, as managing director of the Longford Wire Company, Mr. Dutton was formerly keenly intereſted in the entomology of the Lancashire and Cheshire area, particularly in that of Delamere Foreſt. A note from his pen on the capture of *Lathrobium ruſſipenne* Gyll. and other good ſpecies in that

area appeared in this Magazine for 1910, p. 34, and he was also first to take *Parnus nitidulus* Heer in England (*op. cit.* 1903, 152). Only a month before his death Mr. Dutton had removed to Llandudno from Prestatyn.

Society.

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held at Florence House, Heston, on the 29th November, 1937, Mr. H. Donisthorpe in the Chair.

Members present in addition to the Chairman: Mr. H. Willoughby Ellis, Mr. Jas. E. Collin, Dr. Harry Eltringham, Mr. R. W. Lloyd, Major Philip P. Graves. Visitors present: Dr. Karl Jordan, Capt. N. D. Riley, Mr. W. Rait Smith, Mr. W. H. T. Tams.

The guests were received by Mr. Donisthorpe and the Misses Kirk.

The meeting was called for 6.30 p.m., and during a pleasant conversazione the Chairman's series of albums of photographs and reminiscences were inspected with much interest. Supper was served at 7.30, after which Dr. Jordan described an interesting phenomenon observed by him in Angola. Below the first escarpment, about 50 miles from the coast, a brook of clear water fell over a ridge of igneous rock, forming a waterfall about three feet high and ten inches thick at the top of the fall. On the vertical surface of the ridge washed by the fall a Parnid beetle was found in some numbers. When scraped off the rock with a stick the beetles were washed away, but were soon seen flying back towards the waterfall. They dived into it, and in spite of the considerable force of the falling water safely reached their original position under the waterfall, and rather higher up than the point where they plunged into it. Dr. Jordan suggests that the difference in pressure between the outer and inner strata of the falling water drove the torpedo-shaped beetle inward and upward like an air-bubble, the beetle being surrounded with air held in place by a dense coat of short hair, and the momentum of the plunge shooting the beetle deep enough into the fall that the pressure on its tail by the falling water was greater than the pressure on the head.

The party broke up from 10.30 onwards, a very pleasant evening having been spent.—H. WILLOUGHBY ELLIS, *Hon. Secretary*.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST.

BY HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S., ETC.

(Continued from p. 27)

Gnorimus variabilis L. 'In decayed oak trees and found annually in some plenty near Windsor by Mr. Griesbach' (Stephens, 1830). Retaken by Mr. Bowring at Forest Farm, near Windsor Forest, in 1889. It was next taken by us in 1925. We have taken it in considerable numbers in all stages in the black wood-mould in the forks of old oaks, and have reared it from the larva. The story of our first capture is rather amusing and worth repeating here. On July 24th, 1925, we took a mounted specimen (which had been

lent to us) in a box to Windsor Forest and showed it to the Forester and some of the woodmen. We asked them if they had ever seen a beetle like that and they said they had not. The Forester asked us where it would be likely to be found. I explained and, looking round, pointed to an old oak which I said would be suitable if we could get up into the forks. The Forester said he was going back to the offices and would send us a short ladder. This was done, and on mounting up into the forks of the tree Miss Kirk immediately found a fine specimen resting on the wood-mould. After lunch the Forester returned to see how we had got on, and we showed him the live specimen in a large glass-topped box. After looking at it for some time he asked to see the specimen in the other box again !

BUPRESTIDAE.

Phaenops cyanea F. 'A specimen is in the collection of Mr. J. H. Griesbach, I believe taken in the vicinity of Windsor' (Stephens, 1830).

Agrilus sinuatus Ol. 'One was taken towards the end of September in Windsor Forest—J. H. Griesbach, Esq.' (Stephens, 1830). Rediscovered by us July 26th, 1927. It is widely distributed on old hawthorn trees, and we have taken it in some numbers; on one day we beat over twenty specimens off one old hawthorn.

A. laticornis Ill. By beating hawthorn trees and by general and evening sweeping; common. (vii, viii.)

A. angustulus Ill. Under similar circumstances as the above and equally common. (vi, vii, viii.)

Melanophila acuminata De Geer. The 'fire beetle.' Dug out of and by beating burnt pines, one on road; not common. (vii, viii, x.)

EUCNEMIDAE.

Throscus dermestoides L. Some eight specimens have been taken in sand-pits, one in hollow tree; not common. (v, viii.)

T. carinifrons Bond. By beating hawthorn, in 'Sulphur Bracket,' and abundant by evening sweeping. (iv, v, vi, vii, viii, ix.)

T. elateroides Heer. In 'Sulphur Bracket'; scarce. (iv.)

T. obtusus Curt. Several in sand-pit; scarce. (v.)

Melasis buprestoides L. Under beech bark and on beech logs; thirty-six specimens and some larvae were found in a small fallen oak bough. (iv, v, vi, viii.)

Eucnemis capucina Ahr. A small series was taken in an old ash tree, one swept, and one in hollow beech tree; scarce. (vi, viii.) This is the only locality in Britain, except the New Forest, where this rare beetle has been taken.

ELATERIDAE.

Lacon murinus L. Larvae and adult under stones ; not common. (vii.)

Cardiophorus thoracicus Er. ' Windsor—Dr. Leach ' (Stephens, 1830). Windsor Forest (T. Desvignes), bought at his sale by E. W. Janson (*teste* Oliver Janson). There are four specimens in the Stephensian Collection.

Cryptohypnus 4-pustulatus F. A few specimens of this pretty little beetle have been taken by general sweeping ; scarce. (vi, vii.)

Elater rufipennis Steph. (Fowler incorrectly gives this species as a synonym of *E. sanguineus* L. The latter is confined to fir and pine trees ; its thorax is much more punctured and has a central furrow, etc.) Dug out of old felled beech trees in some numbers, twenty specimens on one occasion ; one by beating hawthorn blossoms ; local. (i, ii, iii, iv, v, vi.) A specimen emerged in a tin of frass, April 1st, 1928, reared from a larva taken in 1925.

E. lythropterus Germ. ' Windsor ' (Fowler, 1890). We do not know where Fowler got this record from and are inclined to think it refers to the above species.

E. coccinatus Rye. ' Taken in Windsor Forest by Mr. T. H. Griesbach and the late Mr. A. Griesbach and R. Sharman ' (Rye, 1867). Under oak bark, crawling on wood-mould in the forks of old oaks and by brushing in hollow oaks ; rare. (ii, vi, vii.) One specimen emerged in tin, February 11th, 1928, reared from a larva taken in 1925.

E. elongatulus F. By beating hawthorn blossoms, at roots of trees and in rotten oak log ; not common. (v, vi.)

E. balteatus L. In rotten oak logs ; larvae, pupae and imagos in wood-mould in hole in oak tree, by beating hawthorn blossoms, and abundant running about on fir stumps in the sun. Three specimens emerged in tin, February, 1928, reared from larvae taken in 1925 ; common. (ii, iv, v, viii.)

E. nigrinus Payk. ' The specimen in Mr. Griesbach's collection taken I believe near Windsor ' (Stephens, 1830). ' Under " Windsor Forest " in the late E. W. Janson's diaries is the *Elater nigrinus* taken there by Griesbach, from the J. Curtis Collection ' (*teste* Oliver Janson). It is probable that these records refer to the next species.

E. nigerrimus Lac. (*aethiops* Fowler nec Lac. ; *rufitarsis* Desvignes). ' I found three specimens of this insect in old decayed wood, Windsor Forest, March 7th, 1841 ' (T. Desvignes). ' Windsor Forest, Desvignes and Turner ' (Fowler). I took three specimens in an old decayed oak, larvae being numerous, October 26th, 1925.

Subsequently in numbers from several remains of felled oak trees. Several emerged in tin in 1928, reared from larvae taken in 1925. One specimen resting on the stem of a small elder tree, 31.v.27, and one by beating hawthorn blossoms, 30.v.35, are the only specimens taken at large. (ii, iv, v, x.)

Ischnodes sanguinicollis Panz. 'Windsor by W. Griesbach, Esq.' (Stephens, 1930). I took sixteen specimens in the black wood mould from the centre of a hollow ash tree which had just been cut down on February 15th, 1928.

Megapenthes lugens Redt. I have taken two specimens of this very rare beetle on different occasions by beating hawthorn blossoms. (v.)

M. tibialis Lac. 'Windsor—Griesbach' (Fowler). By brushing in hollow tree, in decayed oaks, and on black wood-mould in forks of oaks; one in bird's nest; fourteen specimens in a felled beech tree; rare but widely distributed. (v, vi, viii, x.)

Ludius ferrugineus L. 'Windsor—Dr. Leach' (Stephens, 1830). On July 23rd, 1926, we took eight larvae (which I knew by the very large size of some of them could only belong to this very rare beetle) in the wood-mould of a felled ash in company with the larvae of *Dorcus parallelpepidus*. These were taken home and fixed up in tins filled with frass, and they were supplied with *Dorcus* larvae. They devoured the latter, pupated in large cells made of frass, and emerged in June, 1927. Subsequently many more larvae were taken, at different times, in decayed ash, beech and elm trees, and most of them were successfully reared by Miss Kirk. One teratological specimen with a two-branched antenna was reared. It is curious we only found larvae and remains of the perfect insect; never living adults, nor even pupae.

Melanotus punctolineatus Pel. (*Ectinus aterrimus* Steph.). 'Windsor' (Stephens, 1839).

M. rufipes Hbst. Under fir, beech, elm and oak bark, in bird's nest and by beating fir-tops. Larvae taken in 1925, emerged in tin in 1928. Very common. (i, ii, v, vii.)

M. castanipes Payk. Two specimens were taken in wood-mould in large felled beech; scarce. (viii.)

Athous rhombeus Ol. Under elm, beech, birch and oak bark. Larvae and pupae frequently found and reared; common. (v, vi, vii, viii.)

A. niger L. On bracken, by sweeping and beating young Scots pines; not common. (vii, viii.)

A. longicollis Ol. By general sweeping, only males taken; common. (vi, vii.)

A. haemorrhoidalis F. By general beating and sweeping, beating willows and hawthorn blossoms; common. (v, vi, vii.)

A. vittatus F. By sweeping and beating hawthorn and willows; scarce. (v, vi.)

A. vittatus F. ab. *flicti* Buys. By beating hawthorn; scarce. (v.)

Limonius cylindricus Payk. Common by beating hawthorn blossoms. (v.)

L. minutus L. By beating hawthorn, broom, spruce, etc., and by sweeping; common. (v, vi, vii.)

Limoniscus violaceus Mull. In old beech stump, one adult (Allen) (v), larva Donisthorpe (vi.)

Sericosomus brunneus L. By beating willows and hawthorn; scarce. (v, vi.)

Adrastus limbatus F. By beating hawthorn and sweeping; not common. (v, vi, vii.)

Agriotes sputator L. Under stones, in cut grass, by sweeping, etc.; common. (v, vi, viii.)

A. obscurus L. Under stones, on paths, in reed-refuse, by sweeping, etc.; common. (v, vi, vii, viii.)

A. lineatus L. Under stones, by beating hawthorn, by sweeping, and in haystack bottom; common. (v, vi, xi.)

A. sobrinus Kies. By beating hawthorn and *Rhododendron* blossoms, sweeping, in cut grass, under stones, etc.; common. (iv, v, vi, vii.)

A. pallidulus Ill. By beating hawthorn and crab-apple blossoms and sweeping; especially common by sweeping bluebells. (iv, v, vi, vii, viii.)

Dolopius marginatus L. In sand-pit, by beating hawthorn and oaks, and by sweeping; common. (iv, v, vi.)

Corymbites quercus Gyll. By beating young birches, hawthorn, etc., and by sweeping rushes, etc.; common. (v, vi.)

C. quercus Gyll. ab. *ochropterus* Steph. With the typical form, but much rarer. (vi.)

C. holosericeus F. By beating hawthorn, oaks, etc.; not uncommon. (v, vi.)

C. cruciatus L. 'Rare: but taken by the late W. Griesbach, Esq., near Windsor, of whose capturing four or five examples are in the British Museum' (Stephens, 1830). 'Windsor Forest' (T. Desvignes); bought at the sale of his collection by the late E. W. Janson (*teste* Oliver Janson). There are five examples in the drawer of doubtful British Coleoptera in the British Museum.

Adelocera quercea Hbst. 'I have seen but one specimen which was taken in Windsor Forest. J. H. Griesbach, Esq.' (Stephens,

1830). A specimen was taken by Mr. A. Allen, and a second and a larva by myself, in an old oak in September, 1936.

Campylus linearis L. By sweeping and beating hawthorn and willows; a pupa taken in a beech stump became a perfect insect in a few days; not uncommon. (v, vi.)

DASCILLIDAE.

Helodes minuta L. By beating hawthorn, oak and willows; sweeping reeds, etc., in damp places; common. (v, vi, vii, viii.)

Microcara livida F. By beating alders, oaks, etc., and sweeping in damp places; common. (v, vi, vii.)

Cyphon nitidulus Th. In swan's nest and by sweeping in damp places; common. (vi.)

C. variabilis Thurb. Abundant in swan's nest, in grass and refuse round ponds and by sweeping in damp places; common. (iv, v, vi, vii, viii, ix.)

C. pallidulus Boh. By sweeping in damp places; abundant by sweeping sedge; common. (vi, vii, viii.)

C. padi L. In swan's nests, by beating Mountain Ash and *Prunus* blossoms and by sweeping; common. (iv, v, vi, ix, x.)

Prionocyphon serricornis Müll. The larvae of this insect are common in holes full of water, dead leaves, etc., in and at the foot of beech and oak trees. They can be easily reared by keeping them in bowls containing water and dead leaves, etc. Larvae (viii). Larvae taken 31.viii.26, emerged as perfect insects 6.vi; 21, 25 and 30.vii.27. Adults: one taken in hollow beech, 1.viii.30; one in hole in beech tree, 16.vi.31.

Scirtes hemisphaericus L. In moorhen's nest and in plenty by sweeping reeds, rushes, etc., round ponds; common. (vi, vii.)

LAMPYRIDAE.

Lampyrus noctiluca L. Though we have not taken the adults of the common 'glow-worm,' its larva has been swept, showing that it occurs here. (vi.)

TELEPHORIDAE.

Podabrus alpinus Payk. By beating hawthorn blossoms and on the wing; common. (v, vi.) The black form is much less common.

Telephorus rusticus Fall. By sweeping and beating hawthorn blossoms; common. (v, vi.)

T. lividus L. Found under the same circumstances as the preceding and equally common. (v, vi.)

T. pellucidus F. Also common. *T. nigricans* Müll. and *ab. discoideus* Steph. Also common.

T. rufa L. and ab. *liturata* Fall. By sweeping long grass, etc. The typical form is much rarer than the aberration. (v, vi.)

T. bicolor F. By beating hawthorn and by sweeping; not very common. (v, vi.)

T. haemorrhoidalis F. By sweeping in willow-swamp, beating hawthorn, etc.; common. (v, vi.)

T. oralis Germ. By sweeping ox-eye daisies, etc.; not common. (vi.)

T. fulvicollis F. and ab. *flavilabris* Fall. By sweeping Umbelliferae, etc.; common. (vi, vii.)

T. thoracicus Ol. By sweeping *Spiraea*, and reeds in willow-swamp, etc.; not uncommon (vii). The abs. *theresae* Pic and *suturalis* Schil. occur sparingly with the typical form.

Rhagonycha unicolor Curt. By sweeping long grass; scarce. (vi.)

R. fuscicornis Ol. By beating hawthorn and sweeping in damp spots, etc.; not very common. (vi, vii.)

R. fulva Scop. Very abundant on ragwort, etc. (vii, viii.)

R. testacea L. By beating hawthorn and by sweeping long grass in damp places, etc.; not common. (v, vi, vii.)

R. limbata Th. Common by beating hawthorn blossoms. (v.)

R. pallida F. By beating birch and hawthorn; common. (v.)

Malthinus punctatus Fourc. By beating hawthorn and lime trees; not common. (v, vi, vii.)

M. fuscicornis Ol. By beating hawthorn, oak and elderberry and by sweeping; common. (v, vi, vii, viii.)

M. balteatus Suff. One specimen by beating lime trees (A. A. Allen). (vii.)

M. frontalis Marsh. By beating oaks, sweeping, etc.; not uncommon. (vi, vii.)

Malthodes marginatus Latr. By beating hawthorn and sweeping; common. (v, vi.)

M. flavoguttatus Kies. By sweeping in willow-swamp and beating elder; scarce. (vi.)

M. guttifer Kies. By beating hawthorn blossoms; scarce. (v.)

M. dispar Germ. By sweeping; very local. (vi.)

M. minimus L. Abundant by sweeping reeds, etc. (vi, vii.)

M. crassicornis Maek. One specimen swept off bracken, 24.vi. 1837 (A. A. Allen).

M. atomus Th. By sweeping rather short grass; not common. (vi.)

Malachius bipustulatus L. Abundant by beating hawthorn, willows, etc., and by general sweeping. (v, vi.) Some nice bronze and blue forms occur.

M. bipustulatus L. ab. *immaculicollis* Muls. & Rey. By sweeping in company with the typical form. (vi.)

M. viridis F. By sweeping, 10.v.93. I have never been able to find it again.

M. lusitanicus Er. var. *australis* Muls. One specimen by sweeping long grass, 16.vi.31. The only British record.

M. marginellus Ol. By sweeping; very local. (vi, vii, viii.)

Ebaeus pedicularis Schr. (*Malachius productus* Steph.). 'Windsor. Dr. Leach' (Stephens, 1830). There are three specimens in the Stephensian collection and three in the drawer of doubtful British species in the British Museum.

Axinotarsus ruficollis Ol. In profusion by sweeping long grass, etc., in a lane; very local. (vii.)

Anthocomus rufus Hbst. By sweeping in willow-swamp and herbage round mere; very local. (viii, ix.)

A. fasciatus L. In deer-pen, by beating hawthorn and by sweeping long grass; not common. (vi, vii.)

Dasytes flavipes F. By sweeping comfrey, etc.; common. (vii, viii.)

D. aerosus Kies. By sweeping and beating hawthorn; two bred from an oak bough; common. (v, vi.)

D. oculus Kies. In some numbers by sweeping in willow-swamp; very local. (vi, vii.)

D. niger L. 'It has been taken near Windsor. Dr. Leach' (Stephens, 1830).

Haplocnemus impressus Marsh. Under bark of oak, elm, etc.; on the wing, by beating hawthorn, etc. A pupa taken in 'Tinder Bracket' fungus 20.ix.27, emerged 12.x.27; not uncommon. (i, iv, v, vi, vii, ix, x.)

CLERIDÆ.

Tillus elongatus L. On old oak and beech trees, especially when infested by *Ptilinus pectinicornis* L.; rather common. (vi, vii.)

T. elongatus L. var. *bimaculatus* Don. 'Windsor' (Stephens, 1839).

T. unifasciatus F. 'It has also been taken not infrequently near Windsor' (Stephens, 1830). Windsor Forest (Desvignes); bought by the late E. W. Janson at the sale of Desvignes' collection (*teste* the late Oliver Janson).

Opilo mollis L. On grass stem, under 'Poor Man's Beef' fungus on oak, and by beating lime trees; scarce. (vi, vii, xi.)

Thanasimus formicarius L. 'Windsor, Dr. Leach' (Stephens, 1830). By beating hawthorn, Scots pines and lime trees; in the

borings of *Tomicus laricis* and *Dryocetes villosus*; in numbers flying over large felled Scots pines. Its pink larvae may often be found in the burrows of wood-boring beetles; common. (v, vi, viii, ix, x.)

Necrobia ruficollis F. On bones and by sweeping; not common. (vii, viii, ix.)

N. violacea L. On old bones, dead birds, animals, etc.; common. (v, vi, vii, x.)

N. rufipes De G. By sweeping; rare. (x.)

LYMEXYLONIDAE.

Lymexylon navale L. 'This extraordinary insect has long been reported to inhabit Britain, but until July, 1829, no authentic specimen had occurred; at that period, however, a single female was taken out of an old oak in Windsor Forest by my friend J. H. Griesbach, Esq.' Widely distributed and sometimes abundant flying over felled oak trees, chestnut trees, etc. Females frequently found ovipositing in cracks in old or felled oak trees, etc. We have given the following account of the marriage flight of this insect at Windsor:—

'A few females occurred at intervals during the day, settling on old oak trees, but at about 5.30 p.m. (summer time) a marriage flight took place, which lasted for some two hours. Males and females commenced to fly high up round the trees, occasionally settling on the upper branches, where I believe copulation took place. I confined a female in a small muslin bag and fastened it aloft on a tree; numerous males on the wing made for this tree, swooping and settling on it, and flying off again. Some males and females seemed to arrive in a bee-line from a distance and to join in the joyous flight. Females, after flying round, would settle out of sight on a leafy bough, and males would be seen to fly round and alight on such branches. Every now and then a female would settle on a tree and commence to lay, thrusting her ovipositor and indeed often half her body into the cracks of the tree. After waiting some time she would move to other cracks and repeat the same performance, eventually flying away. There were more males than females, though there were plenty of both sexes present.' (vi, vii, viii.)

PTINIDAE.

Ptinus lichenum Marsh. 'Windsor. Mr. Waterhouse' (Stephens, 1830).

P. subpilosus Müll. In frass in *brunneus* oak trees in company with the ants; one female swept; rare. (iv, vi, viii.)

Niptus hololeucus Fald. One specimen in a fungus-dump, 23.ix.28. I can only suggest that this beetle had been introduced in the food for pheasants.

N. crenatus F. In hotels in Windsor and Old Windsor. (vii, viii.)

Hedobia imperialis L. By beating hawthorn and lime trees; rare. (v, vii.)

Mezium affine Boield. One specimen alive in sugar castor in hotel. (vii.)

ANOBIIDAE.

Dryophilus pusillus Gyll. By beating elder blossoms and by sweeping; scarce. (vi, x.)

Priobium castaneum F. By beating hawthorn and on stacks of beech wood; scarce. (v, vi.)

P. eichhoffi Seidl. On the wing, on old dead beech and oak trees, on stacks of wood; ♂ and ♀ *in cop.* under oak bark; commoner than the preceding. (v, vi, vii.)

Anobium denticolle Panz. In the wood of, and crawling on, old hawthorn tree; pupa taken 2.viii.29, emerged 16.viii.29; very local. (vii, viii.)

A. domesticum Fourc. Reared from a piece of a thick stem of ivy, also by sweeping, beating lime trees and mistletoe, under oak and beech bark, in deer-pens, on stacks of wood, etc. This 'furniture beetle' is frequently met with out of doors here, breeding freely in old oaks, etc. (iv, vi, vii, viii, x, xi.)

A. fulvicorne Sturm. On old trees and logs, by sweeping and beating hawthorn; common by beating oak branches. (vi, vii.)

A. pertinax L. 'Windsor' (Stephens, 1839). There is a specimen in the Stephensian collection.

Gastrallus laevigatus Ol. By sweeping, beating maple and in some numbers on stack of elm logs (Donisthorpe and Allen). (vi, vii, viii.) This capture was a genus and species new to Britain.

Xestobium tessellatum F. In beech, hawthorn and oak trees. We have sometimes found this beetle, which destroyed the roof in Westminster Hall, in numbers under bark of old oaks. (iv, v, vi.)

Ernobius mollis L. Under the bark of a spruce fence, dug out of Scots pines, by beating fir tops and burnt Scots pine; common in the bark of a large dead larch tree. (v, vi, vii, viii.)

E. mulsantianus Sharp. In numbers by beating young burnt pines. (vi, vii, viii.)

E. oblitus Sharp. In company with the above but much less common. (vii, viii.)

E. reversus Sharp. In company with the above; scarce. (vii.)

Ptilinus pectinicornis L. On stacks of wood and oaks, but very common in beech trees. (vi, vii.)

Ochina hederæ Müll. By sweeping, beating hawthorn and ivy stems, brushing in hollow oak, etc.; not common. (vi, vii.)

Caenocara boristæ Hoffm. 'Windsor. Dr. Leach' (Stephens, 1830).

Dorcatoma chrysomelina Sturm. In bird's nest, in old oaks, cherry tree, etc.; abundant on felled oaks. (vi, vii, viii, x.)

D. dresdensis Hbst. In June, 1925, I reared this species in numbers from a 'Tinder Bracket' fungus taken on an old oak in April, 1924.

D. serra Panz. I have reared it in numbers from the 'Dryad' fungus (*Polyporus dryadeus*) and also from 'Tinder Bracket.' (vi.)

D. flavicornis F. 'Found in some numbers in a hollow decayed beech' (A. J. Chitty, 1893). By evening sweeping, beating faggots, on stacks of wood, etc.; not uncommon. (vii, viii.)

Anitys rubens Hoffm. In powdery 'cheesy' oak wood, in oak frass and several in *brunneus* oak; scarce. (vii.)

LYCTIDÆ.

Lyctus cunaliculatus F. On stacks of wood, under bark of oak stump, in elm bough and in numbers on new oak palings. (v, vi, vii, viii.)

L. brunneus Steph. On new oak fence, on elm bough and under boards in saw-mill; not common. (vii, viii.)

(To be continued)

ON THE COLEOPTERA, ETC., OF THE FAROE ISLANDS.

BY JAMES J. WALKER, M.A., R.N., F.L.S.

The first part of Volume II of 'The Zoology of the Faroes: edited by Ad. S. Jensen and others' (Andr. Fred. Høst and Søn, Copenhagen: 1928-1937) deals with the Crustacea, Myriopoda and part of the Insecta. The scanty terrestrial fauna of these remote subarctic islands, situated in the most stormy region of the North Atlantic Ocean, presents certain features of considerable interest from the point of view of animal ecology and of geographical distribution; and the detailed accounts of the various groups included in this part, which are presented throughout in excellent English by a highly competent body of specialists, form a valuable contribution to our Zoological knowledge.

The Faroe Islands are intersected by the 62nd parallel of north latitude, and together occupy an area of 511 square miles, being

distant from the nearest land (Unst, Shetland) nearly 200 miles, and rather more than 280 miles from the south coast of Iceland. All the islands are mountainous and attain a considerable elevation, culminating in Slattevatindur (Osteroë), 2,984 feet above sea-level. A certain amount of cultivation is practicable in sheltered situations at low levels, but most of the surface of the islands consists of bleak moorland and pasture, while trees, with the exception of a few of the hardiest kinds carefully protected from the too prevalent gales, are entirely absent. The growth of certain forms of herbaceous vegetation is, however, surprisingly luxuriant in many favourable situations. When their high northern latitude is considered, the climate of the Faroes is mild and equable, severe frosts in winter being almost unknown, but as a rule the weather is humid and boisterous, with frequent fogs and a marked deficiency of sunshine.

Under these conditions of isolation, climate and vegetation, an extensive insect fauna is not to be looked for. Fourteen Orders in all of insects are represented in the Faroes; of these three, the Hymenoptera, Hemiptera and Diptera, remain to be dealt with in a forthcoming part of the 'Zoology.' The 259 species of insects recorded in Part I are distributed among the eleven Orders as follows :—

			Species.
THYSANOPTERA.	(<i>Kai L. Henriksen</i>)	- -	1
COLLEMBOLA.	(" ")	- -	13
ORTHOPTERA.	(" ")	- -	2
THYSANOPTERA.	(<i>J. Maltback</i>)	- -	1
COPEOGNATHA.	(<i>Kai L. Henriksen</i>)	- -	1
MALLOPHAGA.	(" ")	- -	31
ANOPLURA.	(" ")	- -	2
PLANIPENNIA.	(" ")	- -	1
TRICHOPTERA.	(" ")	- -	17
LEPIDOPTERA.	(<i>Niels L. Wolff</i>)	- -	32
COLEOPTERA.	(<i>August West</i>)	- -	156
SIPHONAPTERA.	(<i>Kai L. Henriksen</i>)	- -	2

No species peculiar to the Faroes are comprised in this list, but some remarkable endemic variations, especially in the Lepidoptera, are met with in the insect fauna of the Islands. Thus the majority of the males of the abundant Ghost Moth, *Hepialus humuli* Linn., as shown by a fine series in the Oxford University Museum collected on Borö by Mr. N. Annandale in 1890, are curiously intermediate in colour and marking between the well-known variety

hethlandica Weir from Shetland and the ordinary white form which is also present. Other conspicuous departures from the normal are found in the Faroese forms of certain Geometrid moths, as in *Cidaria munitata* Hübn., *C. designata* Hufn. (subsp. *faroensis* Wolff), *Eupithecia satyrata curzoni* Gregs. (ab. *trifasciata* Wolff.), *E. nanata* Hübn. (subsp. *zebrata* Wolff), etc. There are almost certainly no resident butterflies in the Faroes, but those well-known migrants *Vanessa cardui* and *V. atalanta*, whose wanderings extend even at times to Iceland, have been observed on several occasions. Some species of insects, as in Iceland, occur in great profusion; as an instance Wolff writes thus of *Cidaria* (*Emmelsia*) *albulata* Schiff.: 'Thousands of this Lepidopteron swarm on cloudy warm days, standing like clouds of dust over the grass fields.' The common earwig *Forficula auricularia* Linn. is abundant, though it appears not yet to have extended its range to Iceland; and the immense swarms of our familiar 'daddy-long-legs,' which appear in late summer, have been noted by more than one non-entomological visitor to the Islands.

The first list of Faroese Coleoptera of any importance was published in 1881 by Dr. H. J. Hansen (1), and included the names of sixty-five species of the Order. In 1890 the Rev. F. A. Walker (2) recorded eleven species taken on flying visits to the islands in the previous year, and in 1900 Dr. D. Sharp (3), who appears not then to have been aware of Hansen's paper, published in this Magazine a list of twenty-nine species of beetles, collected near Thors-havn, the principal town of the Faroes, by Mr. N. Annandale in June of that year. In our following volume Dr. O. M. Reuter (4) draws attention to Hansen's list, and adds the species not enumerated by Dr. Sharp, thus bringing the total number of Faroese Coleoptera then known to seventy-four or seventy-five species. The results of another small collection made by Dr. Annandale in August, 1903, comprising twenty-three species, four of which were new to the island fauna, are given by Dr. Sharp (5) in our volume for that year. I. C. Nielsen (6) in 1908 adds thirteen species from the collections of Warming and Hansen, B. Poppius (7) records in 1909 twenty-eight species collected by W. Klinckowstroem, and K. Holdhaus (8) forty-four species collected by Dr. R. Görgei and Dr. F. Cornu in 1911. Lastly, E. Mjöberg (9) gives a valuable list of seventy-nine species collected by Klinckowstroem in 1915, thus making a total of 117 species of Coleoptera recorded up to the date of his paper from the Faroe Islands.

The masterly treatise by Dr. August West (10) on the Faroese

Coleoptera, as known up to the year 1930, gives ample details of the occurrence and distribution in the islands of 156 species, all of which are found in the British Islands, and are referred to twenty-three families as follows:—

Carabidae	-	-	26 spp.	Dermestidae	-	-	3 spp.
Haliplidae	-	-	1 „	Byrrhidae	-	-	3 „
Dytiscidae	-	-	7 „	Elateridae	-	-	1 „
Staphylinidae	-	-	65 „	Helodidae	-	-	1 „
Scydmaenidae	-	-	1 „	Cantharidae	-	-	1 „
Silphidae	-	-	3 „	Anobiidae	-	-	3 „
Ptiliidae	-	-	1 „	Ptinidae	-	-	3 „
Scarabaeidae	-	-	3 „	Tenebrionidae	-	-	1 „
Hydrophilidae	-	-	8 „	Cerambycidae	-	-	2 „
Cryptophagidae	-	-	8 „	Chrysomelidae	-	-	1 „
Lathridiidae	-	-	1 „	Curculionidae	-	-	12 „
Coccinellidae	-	-	1 „				

It will be interesting to compare this total with the number of species recorded up to the same date from the two nearest regions, viz. the Shetland Islands (232 species) and Iceland (141 species).

The families of Coleoptera which are represented by the greatest number of species are the Carabidae, Dytiscidae, Staphylinidae, Hydrophilidae and Curculionidae, and as many as twenty-one species of the genus *4theta* have been recorded from the Faroes. Some of these, as is the case with the Lepidoptera, are met with in unexpected numbers, and some, *Nebria gyllenhali*, for instance, range from sea-level to the highest mountain summits. Among the most abundant and characteristic beetles of the islands are *Nebria iberica* Oliv. (its near ally *N. brevicollis* Fab. does not appear to occur in the Faroes), *N. gyllenhali* Schön., *Notiophilus biguttatus* Fab., *Trechus obtusus* Er., *Patrobis septentrionis* Dej., *P. assimilis* Chaud., *Calathus fuscipes* Goeze, *C. melanocephalus* var. *nubigena* Hal., *Hydroporus pubescens* Gyll., *Agabus solieri* Aubé, *Tachinus rufipes* De Geer, *Aphodius lapponum* Gyll., *Cercyon haemorrhoidalis* Fab., *Cryptohypnus riparius* Fab., *Chrysomela staphylea* Linn. and *Otiorrhynchus arcticus* Ol. Certain familiar beetles which follow mankind everywhere have in due course made their way to the Faroes, but the two recorded Longicorns, *Callidium violaceum* Linn. and *Gracilia minuta* Fab., and the weevil *Pissodes pini* Linn. are obviously accidental importations.

In July of last year Messrs. H. G. Ververs and F. C. Evans visited Myggenæs, the western outlier of the Faroes (lat. 62° 0' N., long. 6° 30' W.), for the purpose of studying the remarkable avi-

fauna of this remote and little-known island. These gentlemen made a small collection of sixty-eight specimens of Coleoptera referable to fourteen species, which is deposited in the Entomological Department of the Oxford University Museum, and is of special interest, as very few insects have as yet been recorded from Myggenaes. The species, most of which were found under small stones and in and about the burrows of puffins, are as follows:—

Notiophilus biguttatus Fab. (1), *Nebria iberica* Oliv. (1), *N. gyllenhali* Schön. (22), *Loricera pilicornis* Fab. (4), *Amara aulica* Panz. (2), *Calathus melanocephalus* var. *nubigena* Hal. (3), *Trechus obtusus* Er. (2), *Patrobus** (12 specimens which have been critically examined by Dr. K. G. Blair, who refers them all to *septentrionis* Dej.), *Megasternum boletophagum* (1), *Tachinus rufipes* De Geer (5), *Lesteva sharpi* Rye (1), *Choleva watsoni* Spence (3), *Otiorynchus arcticus* Ol. (7) and *O. dubius* Stroem (1). Of these, *Choleva watsoni* is not included in Dr. West's list, and is therefore presumably new to the Faroese fauna.

The late Dr. D. Sharp, in the pages of our Magazine (Vol. XXXIX, p. 250), concludes his second paper on the Coleoptera of the Faroe Islands with the following remarks: 'I shall not be surprised if the number of species actually in the islands will ultimately prove to be as many as two hundred. A resident naturalist who can take advantage of good weather at different seasons is essential to the acquisition of complete knowledge on this point.'

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* On this genus Dr. Sharp (5, p. 250) remarks as follows:—'We do not know enough of the (Faroese) fauna as yet to enable us to deal with the question of variation and other matters of biological interest. It will however be of considerable interest to examine the question of flightlessness. From this point of view the *Patrobus* will be of special interest, as in this genus the wings are in different stages of atrophy according to the species. Do these insects correspond in the extent of this atrophy with the same species on the mainland?'

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Aorangi, Lonsdale Road,
Summertown, Oxford.
March 16th, 1938.

TWO BRITISH SPECIES OF *ATOMARIA* (COL., CRYPTOPIAGIDAE) NEW TO THE EUROPEAN LIST.

BY A. A. ALLEN.

1. *Atomaria lewisi* Reitt. (Deutsche Ent. Zeitschr. . XXI, 1877, p. 112).

A relatively large, broad, and rather depressed species, testaceous or yellowish-brown, immediately separated from all other British members of the genus by the long, outstanding and conspicuous pubescence of the elytra; in all our other species the pubescence is short, decumbent and inconspicuous. In most points of structure it is allied to *A. fuscata* Schön., but in size and colour it more resembles *A. zetterstedti* Zett.; apart from the pubescence, it differs from both in having the elytra neither more finely nor more closely punctured than the thorax. Larger specimens (probably females) have the elytra broader in proportion to the thorax, and the latter varies a little in the degree of angulation of the sides. Even in the field it could hardly be confused with any other of our species, except possibly *zetterstedti*, which, however, has quite a different habitat.

Described from specimens taken by Mr. George Lewis in Japan; it has also occurred in China, Siberia and Marghilan, according to the latest edition (1937) of Winkler's Catalogue. I found two examples in May and one in October, 1937, in a heap of cut grass in our garden at Blackheath, South-East London. Its occurrence in Britain is very unexpected and interesting, as it has apparently not been recorded hitherto from any locality in Europe. The distribution of many of these small beetles is very imperfectly known; the present species would appear to have a wide range in the Old World, like others of the genus (our common *A. fuscata*, for instance, extends to Japan), but evidently becomes very local and scarce towards the West. My specimens run down to this species by Reitter's table, and agree well with the type and cotypes from Nagasaki in the British Museum.

2. *Atomaria elevata* sp. nov.

Allied to *A. fuscata* Schön. and in a lesser degree to *A. bicolor* Er. (*berolinensis* Kr.), from both of which it may be distinguished as follows:—

- (a) Antennae long and slender, joints 8 and 10 sub-elongate; punctuation

of thorax very strong and deep, not close in front, closer behind; elytra about as closely and strongly punctured as front of thorax, widest at or behind middle, apex broadly rounded *A. bicolor*.

(b) Antennae short and thicker, joint 8 slightly, 10 very plainly, transverse, and all the joints shorter; puncturation of thorax not so deep, but in front (at least in part) quite or nearly dense, less so behind; elytra as strongly punctured as front of thorax, but much more diffusely, raised at their widest point, which is before middle, and thence depressed to base, apex somewhat acuminate; elytra and legs reddish-yellow *A. elevata*.

(c) Antennae intermediate, joint 8 quadrate, 10 slightly transverse; puncturation of thorax fine, rather closer behind than in front, where it is not at all dense; elytra more finely punctured than front of thorax or, if not, hardly more diffusely, almost level between middle and base, apex scarcely acuminate; elytra and legs blackish-brown or pitchy-brown (unless immature) ... *A. fuscata*.

A. elevata is also a little smaller than average specimens of *A. fuscata*; its form is rather shorter and more thick-set, the thorax is usually more convex and less transverse, and the greater gibbosity of the elytra is very pronounced. These features, together with the lighter colour, give it more of the general facies of *A. bicolor*, for which I at first mistook it. The width of the elytra in proportion to that of the thorax is somewhat variable, but their shape is constant. The head and thorax are sometimes darker than the elytra and sometimes not. It is unnecessary to compare it with any other British species.

Isle of Grain, North Kent, rather common amongst decaying seaweed and refuse along the shore and in the salt-marshes to the east of Allhallows-on-Sea; first met with in March, 1937, and again on subsequent occasions. Unfortunately at the time I passed it over as *A. bicolor* and took only some half-dozen examples, but have little doubt that it will be readily obtainable again.

I am indebted to Dr. K. G. Blair for much help in the investigation of the two species here brought forward, including the identification of the first.

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March 17th, 1938.

A NOTE ON THE STEPHENSAN SPECIES OF *GYROPHAENA* (COL. STAPHYLINIDAE).

BY K. G. BLAIR.

At the request of Mr. A. Strand, of Oslo, I have recently examined the types of *Gyrophæna fasciata* Marsham and *G. pallicornis* Stephens. Of the former there are three specimens mounted on one bit of paper. All were deeply embedded in gum, one being on its back, but after cleaning they prove to be a ♂ and two ♀♀ of *G. laevipennis* Kraatz. The pin bears both the round white label

with Marsham's number 47, indicating that it was one of a selection from Marsham's collection made by Stephens, and, in the absence of other known specimens from Marsham's collection, we take these to be types of Marsham's species; and also the oval blue label with the number 2872A of Stephens' Manual, 1839. Specimens with these labels we also take to be Stephens' types, though obviously the numbers must have been put on some time after the species were first described, in the 'Illustrations,' Mandib. V, 1832. There are in addition three other specimens over this name, all being *laevipennis*.

Of *G. pallicornis* there is only the single specimen, with the Stephens number 2874. It also is a male of *G. laevipennis* Kraatz.

In G. R. Waterhouse's 'Catalogue of British Coleoptera,' 1861, these species are both synonymised with *congrua* Er., Marsham's name having priority; and this synonymy has been repeated ever since, though *congrua* is of course a very different species. It appears, therefore, that the name *congrua* Er. will have to replace *fasciata* Marsham in our lists, the latter replacing *laevipennis* Kraatz.

At the same time, an examination of the other species of *Gyrophaena* of the Stephens collection proved to be not without interest, some of the names having been misinterpreted, while some have dropped out of recent catalogues altogether. Taking them in the order of the 'Manual' they are, according to present-day terminology, as follows:—

2871. *nitidula* Gyll. 2 ex., both *strictula* Er.

2872. *nana* Payk. The numbered specimen is *affinis* Sahlb., but two other examples are *bihamata* Thoms.

var. *faciata* (sic) Marsh. 6 ex., all, as stated above, *laevipennis* Kraatz.

2873. *affinis* Mann. 1 ex., *manca* Er. (1839-40), ♀. The species was described (Illustrations, Mand. V, 1832) as *angustata* Steph., the name under which it appears in the collection and which has priority over *manca* Er. In Bernhauer and Scheerpeltz's Catalogue (Junk, Col. Cat., pars. 82, 1926) this name is erroneously associated with *nana* Payk.

2874. *pallicornis* Ste. 1 ex., *laevipennis* Kraatz, ♂.

2875. *polita* Gr. The one bearing the number is *manca* Er., ♂, a second being *laevipennis* Kraatz, ♂.

2876. *marginata* Ste. There is no specimen over this name in the collection, and no pin-hole to indicate the presence of one at some former time.

In Waterhouse's Catalogue, 1861, this is given, with an expression of doubt, as a synonym of *nana* Payk., 1800, and it is omitted from Bernhauer and Scheerpeltz's Catalogue. In the absence of a type it will be convenient to accept this suggested synonymy, so that the name will sink.

2877. *latissima* Ste. 1 ex., *Agaricochara laevicollis* Kraatz, 1854. Stephens' name, which is omitted from recent catalogues, has priority over that of Kraatz and should replace it.

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March 9th, 1938.

A SECOND BRITISH SPECIES OF *LEOPOLDIUS* Rond.
(CONOPIDAE).

BY COLBRAN J. WAINWRIGHT, F.R.E.S.

When recording the occurrence of *Conops* (*Leopoldius*) *signata* Wied. on Abberley Hill, Worcestershire, in this Magazine (Vol. LXXI, pp. 179-181) doubt was expressed as to its correct identification. It was mentioned that Kröber (and Séguy) had apparently recognised, chiefly on characters of the females, two distinct species which previously had been confused and mixed under the names *signata* Wied. or *brevisrostris* Germ. and that the Abberley specimens being all ♂♂ it was doubtful to which of those species they should be referred. It was obvious that the capture of ♀♀ at Abberley was necessary to solve the problem, and with that idea in mind further visits were paid to that locality in 1935, 1936 and 1937.

The species is evidently very rare even there, for few specimens have been taken in all, but one ♀ was secured in 1935, three in 1936 and one more in 1937.

No conclusion was reached from the single 1935 specimen and for various reasons the three taken in 1936 remained unexamined, one reason being that it was hoped to obtain still more in 1937. When, however, Mr. J. Collins, of Oxford, the captor of the first British pair at Tubney in 1910, sent for examination a single interesting ♀ which he had taken at Hell Copse near Stanton St. John, Oxon, on July 28th last, it led to a thorough investigation of the problem and the question of identity was solved most unexpectedly, for on examination of the three Abberley 1936 ♀♀ it was found that they belonged to two different species, evidently in

accordance with Kröber's views. Two of them, together with the 1935 and 1937 specimens, were almost certainly co-specific with the ♂♂ previously recorded: the other one was very distinct, and Mr. Collins' Hell Copse individual proved to belong to this second species.

As previously suggested, the distinctions given for the ♀♀ are sufficient, and our two forms accord with Kröber's and Séguy's very brief descriptions, but good characters for the ♂♂ were not given by those authors. The only ♂ taken in 1936 with the ♀ of the second species differed, however, from all our other specimens of this sex on account of certain distinct black facial markings, and although no previous author seems to have made any reference to such markings, yet, especially as they are associated with certain other slight characters to which Kröber and Séguy do refer, it seems likely that this is really the ♂ of our second species, and if these black markings prove constant they would enable the species to be separated as readily in this sex as the ♀♀.

Having arrived at the above results, it became desirable to clear up the identities of the other specimens recorded, and I wrote therefore to Mr. J. Collins about the original 1910 Tubney pair, now belonging to the Hope Museum, and he very kindly obtained them for me to see, and they proved to belong to the first Abberley species. Mr. J. E. Collin kindly re-examined Col. Nurse's specimen, now in his collection, and found that it also belonged to our first-known species. Then Dr. F. W. Edwards, of the British Museum, having reported that they had two ♂♂, one from Windsor Forest (Berks), 12.viii.1930 (H. St. J. Donisthorpe), the other from Mopley Pond, Calshot (Hants), 14.viii.35 (W. H. T. Tams), very kindly sent them on for examination, and these both proved to have the black markings on the face, which seem associated with the second species, and they are almost certainly co-specific with the one Abberley ♂, although the abdominal markings vary, the black bands not having straight hind margins but toothed projections more or less like those of the first species, thus seeming to indicate that characters based on the pattern of the abdominal bands are unreliable.

Having thus established the presence of two good species in this country, it becomes necessary to decide what they should be called. Three names are available, these according to Becker in the 'Katalog' being *brevirostris* Germar (1817), *signatum* Wied. (1824) and *erostratum* Rond. (1844). Kröber (Lindner, 35, Conopidae, pp. 4-5) has used *brevirostris* for our second species and

erostratum for our first, sinking *signatum* as a synonym of *erostratum*. Séguy (Ency. Ent., IX, Mouches Parasites, I, 16-18) follows Kröber but, evidently not quite satisfied, puts *signatum* Wied. pr.p. as a synonym of *brevirostris* also.

Mr. J. E. Collin, who kindly looked up the Germar reference for me, tells me that on the previous plate of the same fascicule is a reference to Meigen's Syst. Besch., IV, the very volume in which occurs Wiedemann's description of *signata*, thus proving that Germar's *brevirostris* was published subsequent to Wiedemann's *signata*, so that *signata* therefore is the oldest of the three names and cannot be sunk as a synonym. Wiedemann's description is very clear and in my opinion, although he calls it a ♂, can only refer to the ♀ of our first species, and Loew, who redescribed the actual specimen in N. Beitr. I, 27, makes it more evident, so that as the oldest name with little doubt as to its application it must be used for our first species. *Erostratum* Rond. is almost certainly correctly referred to the same species and should be sunk therefore as a synonym. Loew thought that Wiedemann's type was co-specific also with *brevirostris* Germ., but Kröber without giving his reasons seems to have decided otherwise, and adopted the name for our second species, and as I cannot disprove this I am accepting his determination meanwhile, though with some doubt. Germar's figure does not quite fit either, but might have been drawn from a ♀ of our second species, although no theka is shown.

The ♀♀ of the two species are easily distinguished as already stated, the genitalia alone providing sufficient distinction. The so-called theka, or 'apophyse copulatrice,' apparently a development of the fifth sternite, united to the fifth tergite with which it forms a complete segment ring, is large and prominent in *brevirostris*, projecting ventrally so much that seen posteriorly its height seems greater than its diameter, and with the lateral ends bent round backwards so as to form nearly two-thirds of a circle, looking rather like a crater with part of the crater wall missing. In *signatus* it is much less prominent, and its ends are not bent round much, so that it is in the form of a shallow arc extending widely across the venter, and seen posteriorly its height seems only about one-third of its width. In both species the posterior slope of the theka, the inside of the curve, is covered with peculiar fine short setae, this setose patch in *brevirostris* thus measuring nearly as much along the longitudinal axis as it does across the venter, whilst in *signatus* it measures about three times as much across

the venter as it does longitudinally. What appears to be the next sternite, the sixth, is also covered with similar short black setae, and the proportions of these patches are reversed in the two species: it is in *brevirostris* that the longitudinal measurement is less than one-quarter of the transverse, whilst in *signatus* it is equal to about one-half. Further, the apical segments in the two species differ, these in *brevirostris* being turned in so as to give the same clubbed effect seen in the ♂, with the seventh sternite not visible, whilst in *signatus* they are not turned in so much, and one can see the underside and the seventh sternite is exposed. The three apical tergites bear comparatively long hairs in *signatus* and shorter ones in *brevirostris*, but this can only be appreciated by comparison of the two species. The abdominal markings are probably sufficiently characteristic in this sex for the two species to be recognised without reference to the genitalia. In *signatus* the black foremarginal bands of the second and third segments have each three projections behind; on the fourth the band is barely visible but the three projections remain as three triangular spots and on the fifth they are reduced to small round spots. These markings will probably, however, prove to be variable. In *brevirostris* there is usually a single triangular projection on the second segment and otherwise the hind margins of the black bands are nearly straight, but there are no spots on the fourth and fifth as in *signatus*.

The single Hell Copse ♀ differs from the Abberley one. The frons instead of being black is dark red, possibly owing to immaturity; the black abdominal bands are wider throughout, that on the second segment being quite straight on the hind margin, whilst that on the third on the contrary has a rather prominent triangular projection, the others being quite straight. Also the dark markings on the femora are more developed. The genitalia, however, remove any uncertainty about its specific identity.

The ♂♂, as already suggested, do not appear to have been clearly distinguished hitherto. *Brevirostris* is described by Kröber as having the black foremarginal abdominal bands nearly straight, with perhaps one tooth projection to the one on the second segment; and *signatus* as having such a projection on all the bands. This character is not confirmed by our specimens: the three ♂♂ that are believed to be *brevirostris* do seem to have these teeth less in evidence on the whole, but there is variation and in one at least they are developed on all the bands. Then an attempt has been made to separate them on the colour of the proboscis; in *brevirostris* this is supposed to be brown and in *signatus* yellow, but both colours occur in my series of *signatus* ♂♂. The femora

in *brevirostris* are apparently normally nearly all yellow, whilst in *signatus* there is a dark streak on the outside of some or all. This too is a variable character and cannot be depended upon. If, however, the three specimens have been correctly identified by me as ♂♂ of *brevirostris* and are typical, they possess one excellent character which seems sufficient. In *signatus* the facial keel is more or less darkened, but otherwise the whole face and orbits below the level of the antennal bases is yellow; in *brevirostris* a broad streak of black runs down from the black frons along the outer slopes of the facial ridges, starting broad, tapering down nearly to a point at the level of the mouth edge and then broadening out again on the buccae. If this proves a constant character no others are needed.

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February 20th, 1938.

A precocious specimen of Pteris brassicae.—To-day at about 1.30 p.m. my daughter observed our cat in eager but ineffectual pursuit of a large white butterfly, which was flying briskly in the bright sunshine in our small garden. The characteristic black markings of *P. brassicae* were distinctly visible, and though I was called just too late to see the insect myself, we are both fully convinced of its identity with that species, whose appearance on the wing at so early a date perhaps deserves a passing notice.—JAMES J. WALKER, Oxford March 4th, 1938.

Hemiptera-Heteroptera in Scotland.—During a week's tour in Scotland at the end of July last, I picked up a few bugs which may be worth recording for the sake of the localities:—

At Ardlui, Dumbartonshire, *Stygnocoris pedestris* Fall., common in flood rubbish by the side of Loch Lomond.

At Onich, Invernesshire, *Teratocoris antennatus* Boh., a few among rushes on marshy ground. At Glenfinnan, in the same county, *Lygus viridis* Fall. and *Phylus melanocephalus* L., both in some numbers on various trees. In Glen Moriston, also in Invernesshire, *Pentatoma rufipes* L., common on oaks; *Phytocoris tiliae* F., sparingly.

At Gairloch, on the west coast of Ross, *Acanthia scotica* Curt., common among the rocks of a stream; *Nysius thymi* Wolff, one or two in sandy places; *Chlamydatus wilkinsoni* D. & S., running on the ground among short grass, trefoil and thyme, rather frequent but difficult to secure owing to its activity.

Near Loch Maree, Ross, *Psallus ambiguus* Fall., on birch; *Phytocoris pini* Kb., abundant on Scotch pine, with *Duchroscytus rufipennis* Fall. less so; *Gerris odontogaster* Zett., several on pools; *Sigara castanea* Th., common in peaty ponds along with *S. nigrolineata* Fieb. in the usual dark form associated with such a habitat; *Glaenocoris cavifrons* Th., sparingly in a small lochan of fairly fresh water.

I spent a good deal of time searching for Corixidae, but July is not a productive month for mature forms, and the three species mentioned were all that were sufficiently mature to be recognisable.—F. H. DAY, Carlisle : *March 10th*, 1938.

THE SIPHUNCULATA OR SUCKING-LICE RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

Owing to an almost complete lack of native mammals from the Pacific Islands, very few species of Siphunculata have been recorded from these regions. It is evident, however, that further collecting, if only from domestic animals, will add to the list of already recorded species. This paper is an attempt to bring together all the records of these parasites which have been published to date.

The lice parasitic on species (or subspecies) of the genus *Rattus* should yield interesting distributional data. I should like to avail myself of this opportunity to urge strongly those interested to collect lice (as well as any other parasites such as fleas, etc.) from rats in the Pacific Islands. The rats occurring inland, rather than those found in the principal towns and ports, should yield the most interesting parasites. I am of the opinion that when more is known regarding the lice parasitic on rats, some evidence will in all probability come to light regarding the relationships of the so-called species, subspecies and races of the genus *Rattus* at present recognised.

Included in this paper are a few new records of lice which I have been able to examine from the Solomon Islands and Juan Fernandez.

Order ANOPLURA.

Suborder SIPHUNCULATA.

Family Haematopinidae.

1. *Hoplopleura oenomydis* Ferris.

Hoplopleura oenomydis Ferris, 1921, Stanford Univ. Publ., Biol. Sci., II (4), pp. 82-84, f. 47-48.

Hoplopleura pacifica Ewing, 1924, Bull. Bishop Mus., Honolulu, 14, pp. 9-11, f. 1, b, c.

Hoplopleura oenomydis Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, pp. 121-127, f. 37, a-i; 38, a-k; 39, a-e.

Hoplopleura oenomydis Ferris, 1935, Stanford Univ. Publ., Biol. Sci., II (8), pp. 88-89.

Ferris' original description was based on specimens taken from the following hosts and localities: — *Oenomys bacchante* Thomas, British East Africa, Molo; *Grammomys surdaster polionops* Asgood, British East Africa, Sukenya Mountain; *Limnomys mearnsi* Hollister and *Rattus calcis* Hollister, Philippine Is. Ewing (1924, *supra cit.*) described his *Hoplopleura pacifica* from specimens obtained from several species of *Rattus*, but he fixed the type host as *Rattus hawaiiensis* Stone, Hawaiian Is., Popoia Islet. The species was also recorded by Ewing from *Rattus* spp., Fanning Island; Samoa, Rose I. Buxton (1928, Insects of Samoa, Pt. VII, fasc. 3, p. 86) recorded that he did not find this parasite on seven specimens of *Rattus exulans* Peale which were examined in Samoa.

Ferris (1932, *supra cit.*) after examining a considerable number of specimens off *Rattus* sp. from Marquesas Is.; Hivaoa: Atuona, Eiao (*Le Bronnec* and *Tauraa*), together with specimens from the following hosts and localities, in addition to his original material: *Rattus rattus diardi* (Jentink), Federated Malay States; *Rattus norvegicus* (Erxleben), Australia, Townsville, and '*Mus* sp.,' Sumatra, arrived at the conclusion that Ewing's *H. pacifica* came within the limits of his species *H. oenomydis*. Ferris concluded (1932, *loc. cit.*, pp. 124-125) 'that in all probability *Hoplopleura oenomydis* is one of those species which are capable of rather ready, even though erratic, transfer from one host species to another. Its occurrence upon *Rattus norvegicus* (Erxleben), of which it is certainly not a normal parasite, would indicate as much. It may be suspected that it was originally a parasite of some species of *Rattus* in the Malayan region and that it has spread from that centre.'

Through the kindness of Mr. Edward P. Mumford, of the Pacific Entomological Survey, I have received some information with regard to the rats collected in the Marquesas Islands and from which Ferris recorded *H. oenomydis*. In Ferris' paper (1932, *supra cit.*) they are referred to as '*Rattus* (field Nos. 10, 12, 14, 15).' It seems that the form is as yet undescribed, but that Mr. Mumford was informed that it was referable to a member of the *Rattus concolor* group nearly related to *R. hawaiiensis* Stone but distinguishable by rather constant peculiarities of general size and of the form of the auditory bulla. Ferris (1935, *supra cit.*) again referred to the synonymy of *H. oenomydis* Ferris and *H. pacifica* Ewing, and added that he had seen specimens from rats in the Hawaiian Is. which confirmed his previous conclusion.

2. *Hoplopleura nesoryzomydis* Ferris.

Hoplopleura nesoryzomydis Ferris, 1921, Stanford Univ. Publ., Biol. Sci., II (2), p. 90, f. 53A.

Ferris (1916, Proc. Calif. Acad. Sci., VI (4), p. 156) erroneously recorded this species as *H. quadridentata* (Neumann), from *Nesoryzomys narboroughi* Heller* and *N. indefessus* Thomas,* Galapagos Is. Later, Ferris (1921, *supra cit.*) described the species as new and in addition recorded it from other Murids of the subfamily Cricetinae from Paraguay, Peru and Panamá, San Miguel I.

3. *Polyplax spinulosa* (Burmeister).

Pediculus spinulosus Burmeister, 1838, Genera Insectorum, Berlin, No. 8.

Polyplax spinulosa (Burmeister), Ferris, 1923, Stanford Univ. Publ., Biol. Sci., II (4), pp. 187-191, f. 119, 120A, 120B, 120F, 120H.

This louse is the normal parasite of domestic rats, i.e. *Rattus rattus* (L.) and *Rattus norvegicus* (Erxleben) and has also been recorded from other *Rattus* spp. in various parts of the world. Ferris (1923, *supra cit.*) recorded it from *Rattus rattus* (L.), Galapagos Is. Buxton (1927, Researches in Polynesia and Melanesia, London, p. 55, and 1928, Insects of Samoa, Pt. VII, fasc. 3, p. 86) recorded this species from *Rattus rattus* (L.), Samoa, Apia. Ferris (1932, Bull. Bishop Mus., Honolulu, 98, p. 127) recorded it from *Rattus* sp., Marquesas Is., Hivaoa, Atuona (see above for notes on *Rattus* sp. from the Marquesas Is.).

I have recently seen specimens of this species from *Rattus rattus* (L.), Juan Fernandez, Masatierra, 23.iv.1917 (K. Bäckström).

4. *Haematopinus eurysternus* (Nitzsch).

Pediculus eurysternus Nitzsch, 1818, Germar's Magazin der Entomologie, III, p. 205.

Haematopinus eurysternus (Nitzsch), Ferris, 1933, Stanford Univ. Publ., Biol. Sci., II (6), pp. 34-38, f. 263-264.

Jepson (1911, Rept. Econ. Entom., Dept. Agric. Fiji, Council Paper 25, p. 28) recorded this species from cattle in Fiji. Veitch and Greenwood (1921, Proc. Linn. Soc., N.S.W., XLVI, p. 515) also recorded it from cattle in Fiji. Ferris (1933, *supra cit.*) recorded this species, which is a parasite on domestic cattle, from British Solomon Is., Hawaiian Is., Honolulu.

* These two mammals are endemic to the Galapagos Is

5. *Haematopinus suis* (Linnaeus).

Pediculus suis Linn., 1758, Systema Naturae, p. 611.

Haematopinus suis (Linn.), Ferris, 1933, Stanford Univ. Publ., Biol. Sci., II (6), pp. 425-431, f. 252A, 253A, 254, 255B-X, 256.

This species, the louse of domestic and wild pigs, has been recorded from most parts of the world. Van Dine (1909, Ann. Rept. Hawaii Agric. Exp. Sta., p. 36) recorded it from hogs in Hawaii, Honolulu. Jepson (1911, Rept. Econ. Entom., Dept. Agric. Fiji, Council Paper 25, p. 28) and Veitch and Greenwood (1921, Proc. Linn. Soc., N.S.W., XLVI, p. 515) recorded it under various names from pigs in Fiji. Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 43) also recorded it from swine, Hawaiian Is., Lanai I. Buxton (1927, Researches in Polynesia and Melanesia, p. 55, and 1928, Insects of Samoa, Pt. VII, fasc. 3, p. 86) recorded the species from swine, under the name *Haematopinus suis* var. *adventicius* Neumann, New Hebrides, Esperitu Santo, Hog Harbour; Samoa, nr. Apia. Ferris (1933, *supra cit.*) recorded it from Fiji Is., Taviuni; Samoa, Upolu; Society Is., Tahiti.

I have seen this species from '*Sus papuensis*,' British Solomon Islands, Guadalcanar, Kookoon, x.1931 (R. A. Lever).

Family Pediculidae.

6. *Pediculus humanus* Linnaeus.

Pediculus humanus Linn., 1758, Systema Naturae, p. 610.

Pediculus humanus Linn., Ferris, 1935, Stanford Univ. Publ., Biol. Sci., II (8), pp. 543-588, Pls. I-III, f. 306-327.

Jepson (1911, Rept. Econ. Entom., Dept. Agric. Fiji, Council Paper 25, p. 28) recorded this species from Fiji. Doane (1914, Bull. ent. Res., IV, p. 269) mentioned that it was very common in Samoa. Veitch and Greenwood (1921, Proc. Linn. Soc., N.S.W., XLVI, p. 515) recorded it from Fiji. Herms (1925, Pan-Pacif. Ent., II, p. 53) remarked that the human louse was very abundant among the native Gilbertese and recorded specimens from the natives of Fanning I. Buxton (1927, Researches in Polynesia and Melanesia, London, p. 55, and 1928, Insects of Samoa, Pt. VII, fasc. 3, p. 86) recorded this human louse from Samoa, where he said it is abundant. Ferris (1935, *op. cit.*, p. 555) recorded it from the heads of natives, Rennel I., Kuugana Bay; from women, Marquesas Is., Uapou, Hakateau village; from heads of native children, Society Is., Tahiti, Hitiaa. I have recently seen specimens collected by Mr. R. A. Lever, presumably from natives, British Solomon Is., Tulagi, 19.iii.1934.

Family Phthiridae.

7. *Phthirus pubis* (Linnaeus).

Pediculus pubis Linn., 1758, Systema Naturae, p. 611.

Phthirus pubis (Linn.), Ferris, 1935, Stanford Univ. Publ., Biol. Sci., II (8), pp. 603-608, f. 335-337.

Recorded from the Fiji Is. by Jepson (1911, Rept. Econ. Entom., Dept. Agric. Fiji, Council Paper 25, p. 28) and Veitch and Greenwood (1921, Proc. Linn. Soc., N.S.W., XLVI, p. 515). Buxton (1927, Researches in Polynesia and Melanesia, London, p. 55, and 1928, Insects of Samoa, Pt. VII, fasc. 3, p. 86) recorded this species from Samoa on the basis of some eggs which he found on the eyelashes of a Samoan schoolboy. Ferris (1935, *supra cit.*) recorded it from a man, Marquesas Is.

The following species of sucking lice may be included here, as they are parasitic on sea-lions and the 'elephant-seal' and may be found on these hosts in the region under consideration:—

(a) *Antarctophthirus microchir* (Trouessart and Neumann), 1888.

(b) *Antarctophthirus trichechi* (Bohemann), 1865.

(c) *Lepidophthirus macrorhini* Enderlein, 1904.

For detailed descriptions and figures of these and other closely related species see Ferris (1934, Stanford Univ. Publ., Biol. Sci., II (7), pp. 16-32).

SUMMARY OF THE RECORDS.

SPECIES OF SIPHUNCULATA.	NAMES OF THE ISLANDS.									
	Brit. Solomon Is.	Rennel I.	New Hebrides.	Fiji Is.	Samoa.	Society Is.	Fanning I.	Hawaiian Is.	Marquesas Is.	Galapagos Is.
1. <i>Hoplopleura oenomydis</i> Ferris.	—	—	—	—	+	—	+	+	+	—
2. <i>Hoplopleura nesorysomydis</i> .. Ferris.	—	—	—	—	—	—	—	—	—	+
3. <i>Polyplax spinulosa</i> (Burm.).	—	—	—	—	+	—	—	—	+	+
4. <i>Haematopinus eurysternus</i> ... (Nitzsch).	+	—	—	+	—	—	—	+	—	—
5. <i>Haematopinus suis</i> (Linnaeus).	+	—	+	+	+	+	—	+	—	—
6. <i>Pediculus humanus</i> (Linnaeus).	+	+	—	+	—	+	+	—	+	—
7. <i>Phthirus pubis</i> (Linnaeus).	—	—	—	+	+	—	—	—	+	—

Review.

'A TEXTBOOK OF PLANT VIRUS DISEASES.' By KENNETH M. SMITH. London : J. & A. Churchill. 1937. vii—615 pp., 101 figs. 21/-.

The study of virus diseases in plants is comparatively modern; the work of W. A. Orton published in 1913-14 drew attention to the subject, and H. M. Quanjer opened up the field by his papers issued in 1920-21. One of the earliest British workers to become interested in this intricate work was Dr. Kenneth Smith, who, since he has been at Cambridge, has made both valuable original contributions and also reviewed from time to time the progress of the investigations in a series of monographs. One of the difficulties of presenting a comprehensive survey is the impossibility of classifying the diseases on the basis of the organisms because so far they have eluded detection, are not reduced to a system and are identified by what one may call symptoms. In this textbook the author has adopted as his primary classification the only possible one, that according to botanical families, the diseases attacking more than one host-plant being treated numerically; supplementary divisions are devoted to the insect-vectors and an appendix gives the recognition characters of the virus attacking each host-plant, one of the most useful features of the work.

The major portion of the book, some 457 pages, is occupied with the former. The virus, its synonyms (even these obscure diseases have apparently acquired additional names), symptoms and its properties are described, its mode of transmission and its appearance in other host-plants summarised. The work is indeed very well done, very comprehensive and fully documented; it is only when the whole of the information available is brought together in this way that the extent of the subject is realised. A cursory survey made against our own bibliography has not detected any omissions.

The vectors are treated according to orders—Thysanoptera, Heteroptera and Homoptera. A description and a good illustration are given for each. The author has safeguarded himself against criticism over the names he uses for some of the insects, and where differences of opinion exist amongst specialists as to these, who can blame him for attempting to steer a middle course? He would be a bold man, however, who thought that the final word had been said on the proper name of the Pink and Green Potato Aphid despite the authority quoted, or that *Myzus pseudosolani* should not be a synonym of an earlier species, while during the last year or so reasons have been given for believing that the Strawberry Capitophorus in this country is *C. fragariae* and not the American *C. fragaefolii*, and *C. potentillae*, as fixed by Theobald, is not one of its synonyms. Also the aleyrodid *Bemisia gossypiperda* is much more likely to be the old *B. tabaci*, which is known to be variable in the characters used in its differentiation, a variability which will probably necessitate the sinking of one or more species recently erected, unless the specific identity of these can be maintained on other grounds. *Bemisia nigeriensis* should be credited to Corbett and *Cicadulina storeyi* (fig. 83) to China, and not referred to as new species; the reference (p. 481) to *Cicadula divisa* and *C. sexnotata* is rather misleading, since the latter is not a synonym of the former; *Peregrinus maidis* can hardly be classified as a Jassid; the legend of fig. 91 should read *Brevicoryne*, rather than *Rhopalosiphum*, *brassicae*, and the remark on the position of the antennal sensorium under fig. 96 would perhaps have been better omitted, since the apparent presence of this organ on the fourth segment is due to the fusion of the third and fourth. Considering the wide field the book covers, it is remarkably free from mistakes, is well illustrated both by photographs and line drawings, is well produced, and is a very necessary addition to the library of every nature student interested in plant diseases in general.—F. LAING.

PRELIMINARY NOTES ON THE GENUS *POPILIUS* KAUF
(COL. PASSALIDAE).

BY JOHN R. DIBB, F.R.E.S.

INTRODUCTORY REMARKS.

The genus *Popilius* Kauf can be readily differentiated from the remaining genera of the Pseudacanthinae by the combination of the following characters: the tridentate mandibles, hairless metasternum (excluding anterior intermediate areas and lateral areas), the presence of a cephalic central tubercle and the non-fusion of the elytra. It is the dominant genus of its subfamily, containing more than fifty per cent. of the species, and ranges from New York to Brazil.

The results of the examination of two-hundred and forty-seven specimens of the genus, which appear below, can only be regarded as tentative for the following reasons. Firstly the materials probably provide little more than fifty per cent. of the species of the genus, and secondly the specimens as a whole are by no means representative of the great geographical range of *Popilius*.

We referred thirty-seven species to *Popilius* in Junk Coleopterorum Catalogus (1),¹ and whilst we were then aware that this number would be reduced by synonymy we now find that additions will be made through the description of species not hitherto known. The last remark is supported by examples in the collections of the United States National Museum, Washington, to which we have had access through the kind co-operation of Dr. E. A. Chapin and the museum authorities, and further materials in the British Museum and in the Hincks-Dibb collection.

HISTORICAL.

Kuwert (2) included thirty-three of the species, fourteen of which he described as new. Ten of the latter have not been referred to (except in the above-mentioned catalogue) since his own work in 1896. He placed these thirty-three species in the five genera *Passalus*, *Popilius*, *Soranus*, *Passalotaenius* and *Odontotaenius*, the three last mentioned genera being subsequently reduced to synonyms of *Popilius*.

Gravely (3) tabulated nine species including two of his own.

Luederwaldt in his Monograph of Brazilian Passalidae (4) included six species and is the only author who divided the genus *Popilius* into species groups. We append a précis of Luederwaldt's grouping applied to the Brazilian species.

¹ The numbers in brackets refer to literature listed at the end of this paper.

**THE BRAZILIAN SPECIES OF *POPILIUS* ACCORDING TO
LUEDERWALDT (1931).²**

1. Central tubercle feebly developed, quite or almost without free apex.
2. Frontal carinae not joined to central tubercle by longitudinal ridge
..... I. *sieberi* Group.
3. Frontal carinae sinuate, remote from clypeus, ending at inner tubercles
..... 1. *sieberi* (Kuw.).
33. Frontal carinae almost straight, continuing to the outer tubercles
..... 2. *amazonicus* Grav.
22. Frontal carinae joined to central tubercle by longitudinal ridge
..... II. *tetraphyllus* Group.
4. Antennae with three lamellae.
5. Parietal carinae transverse, not grooved 3. *marginatus* (Perch.).
55. Parietal carinae transverse, but strongly angulate and strongly grooved
..... 4. *varius* Kuw.
44. Antennae with (four) five lamellae, the first two much shortened
..... 5. *tetraphyllus* Eschsch.
11. Central tubercle very robust, amply free III. *cornutus* Group.
..... 6. *cornutus* (F.).

In our species group table below, three of the group characters used by Luederwaldt hold good when applied to our more extended list of species. The three characters referred to are those indicated by points 1, 2 and 55 of Luederwaldt's table.

THE SPECIES GROUPS.

To obviate the erection of subgenera the arrangement of the species in groups is here adopted. The primary group characters are all evident on the dorsal aspect of the head (vide text-fig.) and may be summarised as follows:—

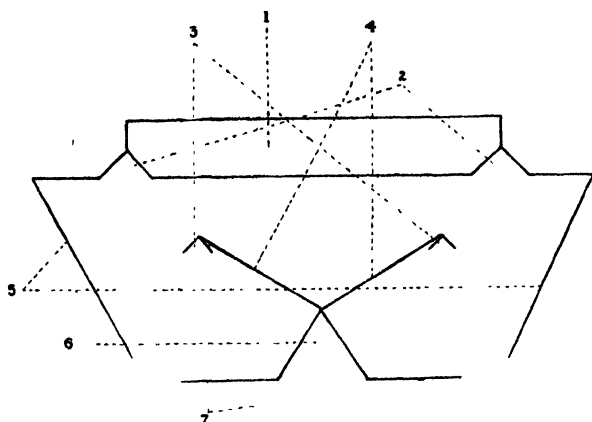
1. Development of inner tubercles.
2. Development of frontal carinae.
3. Form of clypeus.
4. Type of parietal carinae.
5. Position of frontal carinae in relation to central tubercle.

It is recognised that the shape of the clypeus and of the central tubercle are variable characters, even within the species in some instances, and their use as group and specific characters is therefore limited. The central tubercle varies, in this genus, from being so small and insignificant as to be scarcely recognisable to a large and pedunculate outgrowth which is the most conspicuous part of the head. The clypeus, whilst not such a variable structure, nevertheless ranges between a narrow fold to a broad and flat exposed plate.

Seven groups have been recognised, although one—the tropicus group—is not satisfactory. *P. tropicus* appears to be one of the

² Free translation by J. R. D.

most variable species, and the limits of its specific variation have not been ascertainable from the materials so far examined. Although most of the examples we have seen do not possess a marked median prominence on the anterior clypeal margin, occasional specimens show a slight indication of this development. The shape of the frontal and parietal carinae in *tropicus* approaches closely the form of the same ridges in the *eclipticus* group, but the frontal carinae are longer and usually more curved in the latter group. The central tubercle in occasional examples of *tropicus* is quite free.



Diagrammatic representation of dorsal surface of head of hypothetical species of *Popilius*.

- 1, clypeus; 2, outer tubercles; 3, inner tubercles; 4, frontal carinae;
5, supra-orbital carinae; 6, central tubercle; 7, parietal carinae.

KEY TO THE SPECIES GROUPS OF *POPILIUS*.

1. Inner tubercles and/or frontal carinae present 2.
- Inner tubercles and frontal carinae obsolete *disjunctus* Group I.
2. Anterior margin of clypeus distinctly produced in middle
..... *striatopunctatus* Group II.
- Anterior margin of clypeus not produced in middle 3.
3. Central tubercle with free and pointed apex *recticornis* Group III.
- Apex of central tubercle not free³ 4.
4. Parietal carinae distinct and grooved *eclipticus* Group IV.
- Parietal carinae obsolete or not grooved 5.
5. Clypeus cariniform, occasionally broadened medially; central tubercle large,
sub-angulate; apex short but sometimes free *tropicus* Group V.
- Clypeus broad and flat; central tubercle small, not angulate 6.
6. Frontal carinae fused basad for a considerable distance in front of central
tubercle *tetraphyllus* Group VI.
- Frontal carinae entirely separate to base of central tubercle
..... *intergens* Group VII.

³ Except occasionally in *tropicus* (vide text).

We recognise nineteen species in the above seven groups as follows:—

disjunctus, Group I.

1. *disjunctus* (Ill.) 1800.

striatopunctatus, Group II.

2. *striatopunctatus* (Perch.) 1835.
3. *brevioripennis* (Kuw.) 1891.

recticornis, Group III.

4. *recticornis* (Burm.) 1847.
5. *zodiacus* (Truq.) 1857.
6. *wagneri* (Kaup) 1868.
7. *championi* (Bates) 1886.

eclipticus, Group IV.

8. *eclipticus* (Truq.) 1857.
9. *frantzi* Kuw. 1897.
10. *varius* Kuw. 1891.
11. *guatemalae* Grav. 1918.

tropicus, Group V.

12. *tropicus* (Perch.) 1835.

tetraphyllus, Group VI.

13. *tetraphyllus* (Eschsch.) 1829.
14. *marginatus* (Perch.) 1835.
15. *klingelhöfferi* (Kaup.) 1869.
16. *mysticus* Bates 1886.

intergeneus, Group VII.

17. *intergeneus* Bates 1886.
18. *sieberi* (Kuw.) 1897.
19. *amazonicus* Grav. 1918.

Further notes with tables of the species are in preparation which we hope to publish shortly as a supplement to the foregoing.

LITERATURE MENTIONED.

- (1) HINCKS, W. D., and DIBB, J. R. 1935. Coleopterorum Catalogus, *Passalidae*, 142, 1935: 1—118.
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- (3) GRAVELY, F. H. 1918. Revision of the *Passalidae* of the World. Mem. Indian Mus., 7, 1918: 1—144, text figs.
- (4) LUEDERWALDT, H. Monographia dos *Passalideos* do Brasil (Col.). Rev. Mus. Paulista, 17, 1931: 1—262, Pl. and text figs.

1 Moorland Grove, Leeds 7.

February, 1938.

ON TWO NEW SPECIES OF BROMELIADICOLOUS *COPELATUS*
(COL., DYTISCIDAE).

BY J. BALFOUR-BROWNE, B.A.

The two species hereinafter described were taken by Dr. J. Smart from the terrestrial Bromeliad *Brocchinia cordylinoides* from the Kaieteur Savannah, British Guiana, South America. Very many species of this genus are known but they are generally rare in collections and little is known of their habits. I believe the two new species are, the first recorded Bromeliadicolous *Copelatus*, although a species of the related genus *Aglymbus* has been described by Dr. Scott (1) from the epiphytic Bromeliad *Tillandsia* in Jamaica and a species of *Copelatus* has been described, also by Dr. Scott (2), from the leaf-bases of *Pandanus* in the Seychelles. It appears not improbable that further species of the Copelatini will be found to be Bromeliadicolous, whether of terrestrial or epiphytic Bromeliads, since the oval depressed form of the body of this tribe of Dytiscidae is perfectly adapted to the habitat formed by the accumulation of water in the leaf-bases of this type of plant.

***Copelatus fulviceps* nov. sp.**

4.63—4.81 by 2.09—2.27 mm.

Elongato-ovalis, postice leviter attenuatus, depressus, fulvus; capite et prothorace persubtilissime reticulatis, sat crebre subtiliter punctulatis, hoc utrinque (maris minus feminae plus), tenuiter longitudinaliter striolato, elytris fusco-fulvis, persubtilissime reticulatis, sat crebre subtiliter punctulatis, striis quinque, multum disintegratis et leviter impressis, instructis, primâ à suturâ remotâ, striis submarginalibus nullis. Subtus fulvo-piceus, antennis pedibusque fulvo-testaceis. Mas, tibiis anterioribus simplicibus, segmentibus tribus basalibus tarsorum anteriorum intermediorumque dilatatis, fere transversis.

This species appears to belong to the second group of the genus, characterised by the presence of five striae on each elytron and the absence of a submarginal stria. It is, however, quite clearly distinct from any hitherto described species by the character of the striae, which are very lightly impressed, very discontinuous, and which vary somewhat from specimen to specimen. The first, third and fifth follow the course of the three main series of elytral punctures; the first and third begin close behind the base of the elytron, the fifth a long way behind, sometimes as far back as the middle of the elytron. The second and fourth striae follow the course of the two secondary series of elytral punctures, the second generally beginning close behind the base, the fourth generally not

before the middle. All these striae reach about four-fifths of the length of the elytron. In certain females there are a variable number of intermediate striae developed between the five principal striae; in some specimens as many as nine striae can be seen clearly, but these accessory striae are much more broken and rarely extend much beyond the middle of the elytron. All the females possess a sexual sculpture of short striae at the sides towards the anterior angles of the elytra, but the extent of this is variable; in none of the ten females of the type series do these striae of the sexual sculpture extend over the surface of the elytra to reach the suture, and they generally do not extend beyond the first stria. The form of this species is very much less parallel-sided than in any of the Neotropical species belonging to this group, being not unlike the form of *debilis* Sharp from Central America, which also has five striae to each elytron, but possesses a submarginal stria which places it in group 9; the striae of *debilis* are entire and well impressed and there is a complete absence of the female sexual sculpture so that the two species are easily separated.

♂ holotype, ♀ allotype, 2 ♂, 9 ♀ paratypes, from water in the crown of *Brocchinia cordylinoides*, Kaieteur Savannah, British Guiana, South America.

***Copelatus cordylinoides* nov. sp.**

5.54—5.81 by 2.72—2.90 mm.

Ovalis, depressus, piceus, capite et prothorace subtilissime reticulatis, sat crebre subtiliter punctulatis, illo anterieus late rufescente, hoc (maris minus, feminae plus) late striolato, late ad latera rufescente, elytris piceis, ad latera rufescentibus, subtilissime reticulatis, persubtilissime punctulatis, striis decem instructis, primâ secundâque multum brevioribus, striâ submarginali utrinque abbreviatâ. Mas, tibiis anterioribus simplicibus, segmentibus tribus basilibus tarsorum anteriorum intermediarumque dilatatis.

This species belongs to the twelfth group of the genus by the possession of ten striae and a submarginal stria to each elytron. By form the species appears to be related to *integer* Sharp from Central America but it is clearly distinct from that species by the character of the elytral striae, in which the first and second are very short, extending over one-fifth of the elytron or less; the third, which follows the internal series of punctures, is very discontinuous; the fourth, sixth and eighth do not extend much beyond the middle, and the fifth, seventh, ninth and tenth are all long but slightly diminishing in length; by the finer striae of the pronotum and by the presence of a strong sexual sculpture of longitudinal

striae on the elytra of the female; these striae are absent from a fairly broad band just behind the base and over the posterior third of the elytra but are densely scattered over the discal area right up to the suture. In the character of the striation the species is reminiscent of *speciosus* Régimbart (*tarapotensis* Zimmermann), but the striae are markedly finer and less strongly impressed.

♂ holotype, ♀ allotype, 2 ♂ paratypes, from water in the crown of *Brocchinia cordylinoides*, Kaieteur Savannah, British Guiana, South America.

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British Museum (Natural History),
Cromwell Road, London, S.W.7.
April 6th, 1938.

A CONTRIBUTION TO THE STUDY OF THE PALPICORNIA. I.

BY J. BALFOUR-BROWNE, B.A.

***Limnebius nitidus* Marsham 1802.**

picinus Marsham 1802 (non auctt.).

mollis Marsham 1802.

piscinus Leach 1815.

sericans Mulsant 1861 (non Gerhardt 1876).

sericatus Heyden 1870.

gerhardti Heyden 1870, d'Orchymont 1935.

fussi Gerhardt 1876.

dissimilis Kuwert 1889 (1890).

The Stephensian collection in the British Museum includes a selection from Marsham's collection, distinguished by small round white labels which bear the number of Marsham's type corresponding with that of the description in *Coleoptera Britannica*.

Of *Limnebius picinus* and *nitidus* there is one specimen each, identified by their numbers 17 and 15 respectively, which are therefore held to be the holotypes. (They were unfortunately found transposed in the collection, 17 standing over the name *nitidus* and 15 standing over *picinus*). There is no specimen of *mollis* identifiable as being from Marsham's collection.

The holotype of *nitidus* is a female (I have seen the fine hairs of the mesocerci), and the species has been correctly interpreted. The specimen measured $\frac{3}{4}$ line as mounted, as remounted it measures 1.50×0.81 mm. by micrometer.

The holotype of *pycinus* is a male, the apex of the aedeagus being just visible projecting beyond the last ventral segment of the abdomen. The measurement given in the description is ' $\frac{1}{2}$ line' but as mounted it measured $\frac{3}{4}$ line, as remounted it measures 1.55×0.87 mm. by micrometer. ($\frac{1}{2}$ line is 0.82 mm.) There is no specimen in the Stephensian collection under 1 mm. long. The four individuals standing over the label *mollis* vary from $1\frac{1}{2}$ to $1\frac{3}{4}$ mm. long. The available evidence appears to indicate that Marsham's measurement was faulty as we have Stephens' statement¹ that he had 'examined but one example, which (he) obtained from the Marshamian cabinet' and I believe this specimen to be the holotype.

Champion has already pointed out² that the holotype of *pycinus* has the sutural margin of the elytra not bordered behind in the posterior third and is therefore not in the subgenus *Bilimneus*.

Fowler³ appears to have originated the error concerning the sutural margin. Sharp, according to Champion, and the Sharp collection in the Museum, had no British specimen of *Bilimneus* and my father tells me that none of his own specimens of *pycinus* (Brit. auct.) have the sutural margin. I think it is correct to say, as d'Orchymont⁴ suggests, that there is no British species of *Bilimneus*.

There can be no doubt that *pycinus* Marsh., nec. auctt., is conspecific with *nitidus*, and the former name must therefore become a synonym. All the Stephensian specimens of *mollis* are immature but the species is evidently conspecific with *nitidus*.

Fowler (l.c.) gives *atomus* Duftschmid and *minutissimus* Germar in synonymy with *pycinus*. Through the kindness of Dr. Theodor Kerschner of the Oberösterreichisches Landesmuseum in Linz I have the following information concerning Caspar Duftschmid's collection. 'Josef Knörlein acquired various collections of Coleoptera, among them that of Duftschmid. Knörlein presented his collection to the o.ö. Landesmuseum in 1861. Unfortunately he had removed all the original labels and substituted his own, so the Duftschmid specimens are no longer identifiable.'

Gschwendtner has sent me (MS letter via Dr. Kerschner) a very full description of the four specimens standing over the label *Limnebus pusinus* (sic!) Marst. (sic!) in Knörlein's collection and these are stated to have been 'very probably' seen by Duftschmid and used for his description of *atomus*. There are no specimens designated *atomus* Duft. in the collection.

Gschwendtner's description applies very clearly to what is known as *evanescens* Kiesenwetter, belonging to the subgenus

Bilimneus. Duftschmid's name would therefore have priority, but, since the type cannot be identified with certainty, it appears better to place this name in doubtful synonymy with Kiesenwetter's species.

The synonymy *minutissimus* Germar = *atomus* Duftschmid is established on Sturm⁵ who states after a re-description of *minutissimus* that '*atomus* Duft. gehört wahrscheinlich hieher.' I have made enquiries concerning the types of Germar and through the kindness of Dr. Kuntzen of the University Museum, Berlin, and of Dr. Sachtleben of the Deutsches Entomologisches Institut, Berlin-Dahlem, I find that the types of Germar's species are not in either of these Museums. They must therefore be presumed to have been lost. Through the kindness of Dr. Kulzer of the Bayerisches Zoologisches Staatssammlung, Munich, I have ascertained that there are no specimens labelled *minutissimus* in this collection. However, as this collection was labelled entirely according to the catalogue of Gemminger and Harold, where *minutissimus* is found as a synonym of *picinus*, this is not unexpected.

There is nothing in Germar's description of *minutissimus* to suggest that this species was possessed of a sutural stria which would place the species in *Bilimneus*. If it is not included in that subgenus the species must be, by size, the same as the *picinus* Brit. auctt. In either case the name has a valid priority since *atomus* Duft. must be set aside. The question at issue is whether it is better to regard the historical association of the species as a *Bilimneus* as correct or to regard the silence of the original description on the critical subject of the sutural stria as being the deciding factor. To my mind the latter is the more correct solution of the problem, since there is definite proof that the *picinus* of British and Continental authors are not the same species and *minutissimus* has been given in synonymy with both of them. I therefore propose that the name *minutissimus* be associated with the subgenus *Limnebius* s.str. and it must therefore become the name of the *picinus* Brit. auct. nec Marsham, nec Continent. auct.

Peyerimhoff⁶ gives as synonyms of *evanescens* Kiesenwetter amongst others, *picinus* Kuwert (ex parte) (non Marsham) and *atomus* Kuwert (non Duftschmid). These names were based on an examination of Kuwert's collection in which *picinus* was a mixture of *picinus* (*verus*) and *evanescens*. He concludes with the remark that 'il n'y a que deux *Bolimneus*: *picinus* Marsh. et *evanescens* Kiesenwetter.' According to Peyerimhoff the type *tibialis* Kuwert is a male of *evanescens*.

The subgenus *Crepilimnebius* of Kuwert' (= *Bilimneus* Rey) includes *evanescens*, *picinus*, *tibialis* and *atomus* Duft. As we have seen the *picinus* is partly *evanescens* and partly *picinus* Peyerimhoff; *tibialis* and *atomus* are *evanescens*. Kuwert gives as synonymy of *picinus*: *oblongus* Rey 1885; *cassidioides* Baudi 1864; *atomus* Mulsant 1844; *sericans* Gerhardt 1876; and *punctiformis* Müller (no date). With the exception of the last named species, which I am unable to discover elsewhere in the literature, all the descriptions apply to species of *Bilimneus*, and *cassidioides* and *atomus* Mulsant are of identical length with *evanescens*. Kraatz, in a note at the end of Gerhardt's description of *sericans*, gives the synonymy:—a brown species *Limneb. sericans* Gerh. = *picinus* Marsh. and a black species = *atomus* Duft. (Gschwendtner, describes the four specimens of '*pusinus* Marst.' in Knörlein's collection as 'Gelbbraun (hornfarben) mit schwarzbraunen Kopf und halmondformiger Makel in der Mitte des Halschildes, die dessen Hintergrund nicht erreicht. Unterseite schwarz; Fühler und Beine rötlichgelb, Hinterschenkel und Fühlerspitzen dunkler'). But *sericans* Gerh. belongs to *Bilimneus*. It seems from this that *picinus* Peyerimhoff is *sericans* Gerhardt, but this last species is almost undoubtedly *evanescens* by the description and size. Bedel gives these in synonymy with *minutissimus* Germar and *atomus* Duftschmid for *picinus* (ascribed to Marsham).⁸ As we have seen *minutissimus* does not apply here, but this appears to be the first suggestion that the Continental *picinus* is the same as *evanescens* Kiesenwetter.

I have seen the specimens in Champion's collection mentioned as received from Sainte Claire-Deville as *atomus* Duftschmid. They are not that species, however, but agree exactly with the description of *myrmidon* Rey⁹ and with two specimens in Sharp's collection labelled, on a small square of white paper in Sharp's handwriting '*myrmidon* Hte.Pyr' on one side and 'Pandellé' on the reverse. These two specimens were probably from Pandellé's original series.

As Champion has pointed out (l.c.), the *picinus* Brit. auctt. is the *aluta* of Bedel (= *minutissimus* Germ.), of which I have seen a male topotype from Fontainebleau near Paris. Bedel makes *picinus* Gerh. and *atomus* Gerh.¹⁰ (non Duft.) synonymous with this species.

I have compared the male holotype of *picinus* Marsham (= *nitidus* Marsham) and males from Malaga, Spain, and Tangier, Morocco, and I can state positively that the *nitidus* of Britain and

of the Western Mediterranean are the same species. d'Orchymont has recently (l.c.) expressed an uncertainty on this point which may now be removed.

The genotype of *Limnebius* is named by Knisch¹¹ as *Hydrophilus picinus* Marsham. This is in agreement with the rules of nomenclature in that Leach¹² in erecting the genus gives but one species, *piscinus* Marsham. The genotype is, therefore, *Hydrophilus nitidus* Marsham.

For convenience I have listed below the synonymies of the other species mentioned above :—

Limnebius (s.str.) *myrmidon* Rey 1883, 1884 (1885).

atomus teste Ste. Claire-Deville, Champion 1921.

Limnebius (s.str.) *minutissimus* Germar 1824, Sturm 1836.

aluta Bedel 1881, Champion 1921.

atomus Gerhardt 1876 (non Duft., Muls., Fowler).

picinus Gerhardt 1876 (non Marsham, Cont. auctt.).

picinus Brit. auctt. (non Fowler).

Limnebius (*Bilimneus*) *evanescens* Kiesenwetter 1865.

atomus (? Duftschmid 1805) Mulsant 1844, auctt.

cassidioides Baudi 1864 (nom. in coll.).

sericans Gerhardt 1876 (non Mulsant 1861).

picinus Fowler 1887, Kuwert 1889 (1890), Peyerimhoff 1909 (nec Marsh.).

oblongus Rey 1883.

tibialis Kuwert 1889 (1890), Peyerimhoff 1909.

pectoralis Guillebeau 1896, Peyerimhoff 1909.

punctiformis Müller (? date), Kuwert 1889 (1890).

Helophorus (s.str.) *plci* Guillebeau 1893, d'Orchymont 1937.

A short series of specimens taken by my father in the Mitighed Plain ('roadside ditches') behind Algiers, 11.iii.1934, proves to be this little-known species. It has only been known previously by Guillebeau's type, described in 1893¹³ and redescribed by d'Orchymont.¹⁴ An example has been sent to d'Orchymont and confirmed by him.

The series ranges in size between 5.4 by 2.35 mm. and 4.0 by 1.8 mm. (The type measures 5.25 by 2.28 mm.) d'Orchymont (MS letter) points out to me that the lateral margins of the pronotum in the individual sent to him are somewhat sinuous before the posterior angles (nearly straight in the type), and that the scutellum is not metallic but only with a pitchy margin (metallic in the type). The whole series is similar in these characters but there

is some variation in the degree of the sinuosity in front of the posterior pronotal angles.

***Chaetarthria nigerrimus* Blackburn 1891 (*Paracymus*).**

australis Knisch 1922.

sjöstedti Knisch 1922.

Examination of Blackburn's type and only specimen of this species in the British Museum proves it to belong to the genus *Chaetarthria* (first and second ventral segments covered by two plates meeting in the middle) and thus to have no relationship with *Paranacaena lindi* Blackb. and *sublineatus* Blackb. as asserted in the description.¹⁵ I have compared the specimen with the descriptions of *Ch. australis* Knisch¹⁶ and of *Ch. sjöstedti* Knisch¹⁷ and also with specimens of the latter identified by d'Orchymont from the Adelaide River, North-Western Australia (ex coll. J. J. Walker).

Blackburn's type differs from these latter specimens in being blacker and in having a fine but evident puncturation on the head and elytra. The Adelaide River specimens show much variation in the degree of distinctness of this puncturation and in only one specimen is it almost completely effaced. The variations in colour are evidently dependent on the maturity of the individual and are of no specific importance. A careful examination of the nine individuals before me with the type and comparison with the descriptions leaves me in no doubt that they are all one species, which by priority is *Chaetarthria nigerrimus* Blackburn.

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BIRDS SEEN TO ATTACK THE NYMPHALINE BUTTERFLY
ANAEA VERTICORDIA LUCIANA HALL.

BY PROFESSOR G. D. HALE CARPENTER, D.M., F.L.S.

Mr. A. Hall has kindly sent me the following notes. 'When in St. Lucia in 1930 I wanted to get a series of *Anaea verticordia luciana* Hall, a race peculiar to the island.

'Like others of its genus it has a habit of settling on the branches of trees in preference to the leaves. I found a spot where it was fairly common but my efforts to catch it were at first hindered by certain small brown birds, about the size of Robins, which lurked among the bushes and darted at the butterflies just as they had settled or were about to do so. These birds were so persistent that eventually I kept a pile of small stones handy to throw at them. In the end I got a good series of the butterfly but more than fifty per cent. were damaged like those I am sending you, and most of the others to a smaller extent, very few being perfect.

'The butterflies of this group seem to lose part of their hind wings very easily. Once in Venezuela I saw a fine specimen of an allied species, *Hypna rufescens* Butler, settle on a bush when I had no net with me. I tried to take it in my fingers and in fact did so, but to my dismay the insect gave a sort of sudden jerk and flew away, leaving nearly half its hind wings between my finger and thumb. Probably they escape from birds and lizards in this way, as the wings of the much less robust Ithomiinae and Pieridae would never break off like that.'

In response to enquiries, Mr. Hall kindly wrote again as follows: 'I did not actually see the birds catch the butterflies; the movements of both were rather swift and at the time I was too intent on getting the butterflies myself to regard the birds as anything but a nuisance. When bird and butterfly disappeared simultaneously I assumed that the latter had been caught.

'The attacks can hardly have been in sport, as other, commoner, and slower-flying butterflies like *Precis lavinia* Cr. and *Anartia jatrophae* L. did not seem to be molested.'

The toughness of Ithomiinae, and other typically aposematic insects such as Acracinae and Euploeinae, is well known to collectors. An interesting confirmation is that in the collection of beak-marked specimens which I am making at Oxford, and in which Ithomiinae form a very high percentage of cases from South America, injury of the wings to a degree at all serious, is quite exceptional. I have no specimens showing the deep V-shaped gap

often seen in Lycaenidae or Nymphalines. It is also noteworthy that the supposedly distasteful Ithomiinae form a very high percentage of the total number of beak-marked South American specimens: these, be it noted, are specimens which have *escaped* from attack, practically uninjured.

The fourteen specimens of *Anaea* which Mr. Hall kindly sent have all had damage inflicted upon the hind wings, more or less symmetrically, sometimes also involving the front wings. The tails of the hind wings are missing from all except five specimens. The damage is in no case such that it must, obviously, have been inflicted by the beak of a bird which often leaves a narrow, deep, ^-shaped gap in a wing. The hind margins are irregularly or raggedly broken away: such damage might easily, and with justice, be ascribed to the broader mouth of a lizard.

Dept. of Entomology,

Oxford University Museum.

March 25th, 1938.

THE PARASITES OF BRITISH BIRDS AND MAMMALS. XVIII. THE MAMMAL-FLEAS AND THEIR HOSTS.

BY GORDON B. THOMPSON.

This paper contains an analysis of the hosts of our mammal-fleas. They comprise thirty-four species belonging to five families (see Thompson, Ent. mon. Mag., 1935, LXXI, pp. 182-183). The arrangement of the paper is similar to the previous one dealing with the bird-fleas (Ent. mon. Mag., 1937, LXXIII, pp. 137-142) and therefore calls for no explanation.

I have experienced some difficulty in correcting some of the older names used for the British mammals but hope that they will for the most part be found to be correct. I should like to take this opportunity of making a strong appeal to workers publishing records of parasites to be particularly careful to give detailed data as to host. It seems to be too infrequently realised that the name of the host is of the utmost importance—it is in fact far more important than the locality.

The mammal-fleas are here divided into four groups and each table contains an analysis of a group. The tables will, I hope, explain themselves.

TABLE I. FLEAS SHOWING MARKED HOST-SPECIFICITY.

(1) *Xenopsylla cheopis* (Rothschild).

Hosts: *Rattus rattus* (L.).

Rattus norvegicus (Erxleben).

This species is not a native one and, except for five records off *Rattus norvegicus* (Erxleben) captured at Guy's Hospital in 1911, has only been recorded from rats taken at seaport towns.

(2) *Archaeopsylla erinacei erinacei* (Bouché).

Host: *Erinaceus europaeus* (L.) (Hedgehog) (70 records).

There are records of this flea from the fox, probably as a result of the fox having killed a hedgehog for food.

(3) *Spilopsyllus cuniculi* (Dale).

Hosts: *Oryctolagus cuniculus* (L.) (Rabbit) (50 records).

Lepus europaeus occidentalis de Winton (Brown Hare).

Lepus timidus scoticus Hilzheimer (Scottish Mountain or Blue Hare).

This species is very common on the rabbit but has only been recorded from the hares on very few occasions. It has also been recorded frequently from both wild and domestic cats and foxes; no doubt these animals have obtained them as a result of capturing the rabbits for food.

(4) *Orchopeas wickhami* (Baker).

Host: *Sciurus carolinensis* Gmelin (Grey Squirrel) (19 records).

This parasite came to this country with the introduction of the Grey Squirrel.

(5) *Monopsyllus sciurorum* (Schränk).

Hosts: *Sciurus vulgaris leucourus* Kerr (Red Squirrel) (50 records).

Sciurus carolinensis Gmelin (Grey Squirrel) (25 records).

This species of flea has been recorded very commonly from the Red Squirrel and the Grey Squirrel. It occurs more commonly on the Grey Squirrel than does the previous species (*O. wickhami* (Baker)). It has also been recorded on numerous occasions from the stoat and from nests of birds such as Woodpecker, Buzzard, Sparrow-hawk, Long-eared Owl. The stoat probably preys upon the squirrels. The birds almost certainly build their nests on the site of a deserted squirrel's nest.

(6) *Paraceras melis* (Walker).

Host: *Meles meles meles* (L.) (Badger) (30 records).

This parasite shows a very marked host-specificity. It is the largest species of the family Ceratophyllidae.

TABLE II. FLEAS ASSOCIATED WITH MAN AND DOMESTIC ANIMALS.

(1) *Pulex irritans* L.

Host : Man.

The human-flea is very much scarcer nowadays than it was years ago, probably owing to a large extent to the introduction of such utensils as vacuum-cleaners, which remove the breeding media of the fleas. It has also been recorded from dogs on numerous occasions, occasionally on rats and the badger.

(2) *Ctenocephalides canis* (Curtis).(3) *Ctenocephalides felis felis* (Bouché).

Hosts : Domestic dog and cat.

These two species are the so-called dog and cat fleas. The cat flea is the commoner of the two. Both species have on occasions been recorded from fox, rats, etc., no doubt as a result of their associations with human habitations.

TABLE III. FLEAS PARASITIC ON BATS.

SCIENTIFIC AND COMMON NAME OF HOST.	SPECIES OF FLEAS.						
	<i>Ischnopsyllus elongatus</i> (Curtis).	<i>Ischnopsyllus intermedius</i> Rothschild.	<i>Ischnopsyllus octactenus</i> Kolenati.	<i>Ischnopsyllus simplex</i> Rothschild.	<i>Ischnopsyllus hexactenus</i> Kolenati.	<i>Nycteridopsylla euscara major</i> Rothschild.	<i>Nycteridopsylla longiceps</i> Rothschild.
<i>Myotis mystacinus</i> (Kuhl)	—	—	+(16)	+(1)	+(2)	—	—
(Whiskered Bat)							
<i>Myotis nattereri</i> (Kuhl)	—	—	+(3)	+(9)	+(2)	—	—
(Natterer's Bat)							
<i>Myotis bechsteinii</i> (Kuhl)	—	—	—	—	—	—	—
(Bechstein's Bat)							
<i>Myotis daubentonii</i> (Kuhl)	—	—	+(2)	+(1)	—	—	—
(Daubenton's Bat)							
<i>Pipistrellus pipistrellus</i> (Schreber)	—	—	+(29)	—	—	—	+(7)
(Pipistrelle)							
<i>Eptesicus serotinus</i> (Schreber) .	+(1)	+(6)	—	—	+(1)	—	—
(Serotine Bat)							
<i>Nyctalus noctula</i> (Schreber)	+(12)	+(1)	+(1)	—	—	+(2)	—
(Noctule Bat)							
<i>Nyctalus leisleri</i> (Kuhl)	—	—	+(6)	—	—	—	—
(Leisler's Bat)							
<i>Plecotus auritus</i> (L.)	—	—	—	+(1)	+(23)	—	+(3)
(Long-eared Bat)							
<i>Barbastella barbastellus</i>	+(1)	—	—	+(1)	+(1)	—	—
(Schreber) (Barbastelle)							

TABLE IV.

FAMILY OF HOST.	SCIENTIFIC AND COMMON NAME OF HOST.	<i>Malariae penicilliger</i> (Grube).	<i>Nosopsyllus fuscatus</i> (Bosc.).	<i>Nosopsyllus londinensis</i> (Roths.).	<i>Megabothris walkeri</i> (Roths.).
TALPIDAE.	<i>Talpa europaea</i> L. (Common Mole)	+(1)	—	—	+(3)
SORICIDAE.	<i>Sorex araneus castaneus</i> Jenyns (Common Shrew)	+(1)	—	—	+(1)
	<i>Sorex minutus</i> L. (Pigmy Shrew)	—	—	—	—
	<i>Neomys fodiens bicolor</i> (Shaw) (Water Shrew)	—	—	—	—
MUSCARDINIDAE.	<i>Muscardinus avellanarius</i> (L.) (Dormouse)	+(1)	+(3)	—	—
MURIDAE.	<i>Clethrionomys glareolus britannicus</i> (Miller) . (Bank Vole)	+(54)	+(12)	—	+(10)
	<i>Clethrionomys skomerensis</i> (Barrett-Hamilton) (Skomer Vole)	+(1)	—	—	—
	<i>Arvicola amphibius amphibius</i> (L.) (Water Vole)	—	—	—	+(2)
	<i>Microtus agrestis exsul</i> Miller (Hebridean Vole)	—	+(10)	—	—
	<i>Microtus agrestis neglectus</i> (Thompson) ... (Scottish Short-tailed Vole)	+(8)	—	—	+(2)
	<i>Microtus agrestis hirtus</i> (Bellamy) (Short-tailed Vole)	+(21)	—	—	+(32)
	<i>Microtus orcadensis orcadensis</i> Millais (Orkney Vole)	+(3)	—	—	—
	<i>Microtus orcadensis sandayensis</i> Millais ... (Sanday Vole)	+(1)	—	—	—
	<i>Apodemus sylvaticus sylvaticus</i> (L.) (Long-tailed Field-Mouse)	+(16)	+(24)	+(2)	+(4)
	<i>Apodemus fridariensis fridariensis</i> (Kinnear) ... (Fair Isle Mouse)	—	—	—	—
	<i>Apodemus hebridensis hebridensis</i> (de Winton) (Hebridean Mouse)	—	—	—	—
	<i>Apodemus hebridensis fiologan</i> Hinton (Arran Mouse)	—	—	—	—
	<i>Micromys minutus soricinus</i> (Hermann) (Harvest Mouse)	—	—	—	—
	<i>Rattus rattus</i> (L.) (Black Rat)	+(1)	+(2)	—	—
	<i>Rattus norvegicus</i> (Erxleben) (Brown Rat)	—	+(24)	—	+(6)
	<i>Mus musculus</i> L. (House Mouse)	+(2)	+(9)	+(2)	+(1)

FLEAS PARASITIC ON SMALL MAMMALS.

SPECIES OF FLEAS.

<i>Megabothris turbidus</i> (Roths.)	<i>Megabothris rectungulatus</i> (Wahlgren.)	<i>Ctenophthalmus egyptus nobilis</i> (Roths.)	<i>Ctenophthalmus bisectodentatus</i> Kolenati	<i>Rhadinopsylla isacanthus</i> (Roths.).	<i>Rhadinopsylla pentacanthus</i> (Roths.)	<i>Dorotopsyllus dasycnemus</i> Roths.	<i>Palaeopsylla sorectis</i> (Dale).	<i>Palaeopsylla kohauti</i> Dampf.	<i>Palaeopsylla minor</i> (Dale)	<i>Leptopsylla segnis</i> (Schonh.)	<i>Leptopsylla spectabilis</i> (Roths.)	<i>Typhloceras poppei</i> Wagner	<i>Hystrihopssylla talpae</i> (Curtis)
—	—	+(25)	+(21)	+(1)	+(4)	+(1)	—	+(7) ⁵	+(28)	+(1)	+(3)	—	+(21)
—	—	+(9)	+(2)	—	—	+(47)	+(70)	—	+(1)	—	+(4)	—	+(22)
—	—	—	—	—	—	+(1)	+(2)	—	—	—	—	—	—
—	—	+(1)	—	—	—	—	+(4)	—	—	—	—	—	+(1)
—	—	—	—	—	—	—	—	—	—	—	—	—	—
+(21)	—	+(96)	—	+(3)	+(19)	+(3)	+(3)	+(1)	+(1)	+(1)	+(14)	—	+(21)
+(1)	—	+(1)	—	—	+(1)	+(1)	—	—	—	—	—	—	+(1)
—	—	+(12)	—	—	—	—	—	—	—	—	+(1)	—	+(2)
—	—	+(1)	—	—	—	—	—	—	—	—	+(1)	—	—
+(2)	+(1)	+(9)	—	—	—	—	—	—	—	—	+(5)	—	+(13)
+(5)	—	+(63)	+(1)	—	+(8)	+(1)	—	—	—	—	+(20)	+(2)	+(20)
+(1)	—	+(4)	—	—	—	—	—	—	—	—	—	—	+(1)
—	—	—	—	—	—	—	—	—	—	—	—	—	—
+(10)	—	+(80)	+(1)	—	+(9)	+(1)	+(3)	—	+(1)	+(2)	+(4)	+(19)	+(10)
—	—	+(1)	—	—	—	—	—	—	—	—	—	—	—
—	—	+(6)	—	—	—	+(1)	—	—	—	—	—	+(1)	—
—	—	+(1)	—	—	—	—	—	—	—	—	—	—	—
—	—	+(1)	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	+(1)	—	+(2)	—
+(9)	—	+(19)	+(3)	—	+(3)	—	+(1)	—	+(2)	+(2)	—	—	—
+(2)	—	+(18)	—	+(1)	—	—	—	—	—	+(22)	—	+(1)	+(2)

'On the Coleoptera, etc., of the Faroe Islands': a correction.—By an unfortunate oversight, the name of the first Order in the table of Faroese insects on p. 78 *antea* appears as 'THYSANOPTERA.' It should read 'THYSANURA.'—J. J. WALKER.

A note on Quedius picipennis Payk.—It may be well to point out that this is the species of which our common *Q. molochinus* Grav. is a variety with red elytra: although it has long been recognised that we possess a rare form of *molochinus* with black elytra, its identity with the continental *Q. picipennis* Payk. seems to have escaped notice until very recently. I have seen very few British specimens of the typical form, which appears to be common on the Continent: in September, 1937, Mr. H. Langford Lewis took a specimen under refuse by a roadside in Moor Park, Herts., which he kindly presented to me. The insect is easily distinguished from any of the other larger black species of *Quedius* by its short and narrow elytra and by having the basal joints of the antennae spotted with black.

This species must not be confused with the *Quedius picipennis* of Heer, also British, but belonging to a different group (*Raphirus* Steph.), and formerly regarded as a variety of *Q. attenuatus* Gyll. As Paykull's use of the name has priority (1800), the name *scribae* Gang. must replace *picipennis* Heer (1838), as in Sir T. H. Beare's Catalogue.—A. A. ALLEN, 63 Blackheath Park, London, S.E.3: April 18th, 1938.

[This species is recorded from Windsor Forest by Mr. Donisthorpe, Ent. mo. Mag., 73, 1937: 140.—EDS.]

Aculeate Hymenoptera in March.—The warm spell during March has been responsible for the emergence of species of *Andrena*, some of which in a normal year do not appear on the wing until much later.

March 4th, Oxshott. A colony of *Andrena clarkella* (Kirby) was found on a rising patch of sandy ground and, despite the lateness of the hour (4 p.m.), both sexes, in perfect condition, were flying around their burrows. The males frequently settled on the sunny side of a silver-birch trunk.

March 5th, Mill Hill. A large number of *Andrena bicolor* (Fabr.) ♂♂ were flying over a hard patch of ground, but no females were seen. On Stanmore Common a compact colony of *A. clarkella* was found on an area that had recently burnt off.

March 13th, Oxshott. *A. clarkella* was abundant all over the heath, and *Nomada leucophthalma* (Kirby) ♂ was taken at *Salix*.

March 19th, Mill Hill. *Psithyrus barbutellus* (Kirby), *Andrena bicolor* ♂♂ and ♀♀, *A. haemorrhoa* (Fabr.) ♂, *A. chrysosceles* (Kirby) ♀♀, and *Halictus villosulus* (Kirby) ♀, were found on coltsfoot flowers. *A. chrysosceles* was stylopized in every case; in 1936 my first record for this species was on April 11th (♀♀ in the same locality).

March 20th, Limpsfield Chert, Surrey. *A. clarkella* ♀♀ and ♂, *A. bicolor* ♂♂ and ♀♀, *A. spinigera* (Kirby) ♂, *A. trimmerana* (Kirby) ♂, *A. bimaculata* (Kirby) ♂, *A. tibialis* (Kirby) ♂, *A. apicata* Sm. ♂♂ and ♀, *A. praecox* (Scop.) ♀ and one ♂ taken on a silver-birch trunk at Limpsfield Common on March 6th, *A. parvula* (Kirby) ♂, *Nomada fabriciana* (Lin.) ♂, *N. leucophthalma* (Kirby) ♀♀.

March 22nd, Hampstead Heath. During a very brief visit large numbers of *Andrena tibialis* ♂♂ were seen, and one pair was taken 'in coitu.' A single *Andrena armata* (Gm.) ♀ was found lying on a path.—K. M. GUICHARD, 10 Lyndhurst Gardens, N.W.3: March 29th, 1938.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST.

BY HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S., ETC.

(Continued from p. 77)

SPHINDIDAE.

Sphindus dubius Gyll. By sweeping, on the wing over stack of wood and frequent in the powdery fungus *Reticularia lycoperdon* on stumps. (vi, viii, ix, x.)

CISSIDAE.

Cis boleti Scop. In *Trametes gibbosa* on beech, and especially *Polystictus versicolor*; very abundant. (ii, vi, viii, ix, xi.)

C. villosulus Marsh. In the same fungus as the above but not so common; one specimen by beating fallows. (ii, iii, iv, v, vi, viii, ix.)

C. micans F. In *Polystictus versicolor* on felled oak; very local. (ix.)

C. hispidus Payk. In the same fungi as *C. boleti*; not uncommon. (vi, viii.)

C. bidentatus Ol. In *Fomes ulmarius*, *Trametes gibbosa*, 'Sulphur Bracket' and 'Birch Bracket' fungi; also by sweeping; common. (iv, v, vi, viii, ix.)

C. alni Gyll. In 'Jew's Ear' fungus (*Hirneola auricula-judae*), in bird's nest, in the topmost branches of ash trees, and by beating lime trees; not common. (ii, iii, v, vi, vii.)

C. coluber Abeille. One specimen was taken crawling on the branch of a felled oak, 17.vii.25. I have not been able to find it again. The late Colonel Sainte-Claire Deville told me that it occurred in well-preserved oak forests in France.

C. nitidus Hbst. In 'Tinder Bracket' fungi (*Fomes fomentarius* and *F. ulmarius*); abundant. (iv, v, vi, viii, ix, xi.)

C. jacquemarti Mell. This northern species occurs in great numbers in *Fomes fomentarius*. (i, viii, ix, x.) I believe this is its only English locality.

C. pygmaeus Marsh. By sweeping, on beech and oak logs; plentiful by beating oak branches. (vi, vii, viii, x.)

C. rhododactylus Marsh. (*pygmaeus* Fowler). In fungi on stumps, in powdery white wood-frass of oaks, by evening sweeping, and in straw in deer-pen; less common than the above. (vi, vii.)

C. fuscatus Mell. In 'Birch Bracket,' 'Tinder Bracket' and the 'Dryad' fungi, often abundant in 'Sulphur Bracket,' on oak logs and under hawthorn bark; common. (v, vi, vii, viii, ix, x.)

C. quadridentellus Perris. In the 'Dryad' fungus in a hollow beech; very scarce. (vi.) The only British record.

C. bilamellatus Wood. In *Trametes gibbosa*, *Fomes fomentarius* and in great numbers in *Polyporus betulinus*; common. (ii, vi, viii, ix, x, xi.)

C. savilli Donis. By sweeping *Carex* in *Sphagnum* swamp; one specimen, 9.vi.36.

Rhopalodontus fronticornis Panz. In numbers in *Trametes gibbosa*, *Polystictus versicolor*, 'Sulphur Bracket,' etc.; common. (v, vi, viii.)

Ennearthron affine Gyll. In 'Tinder Bracket,' *Polystictus versicolor*, under oak bark, etc.; common. (ii, iv, vi, ix, xi.)

E. cornutum Gyll. In 'Dryad's Saddle,' 'Sulphur Bracket,' 'Tinder Bracket,' 'Birch Bracket' fungi, etc.; common. (iv, vi, viii, ix, x.)

Octotemnus glabriculus Gyll. In *Trametes gibbosa*, *Polystictus versicolor*, etc.; common. (vi, viii, ix.)

PRIONIDAE.

Spondylis buprestoides Fab. 'I have seen but one indigenous specimen of this, which was taken in Windsor Forest, August, 1831.—Rev. F. W. Hope' (Stephens, 1831). There are two specimens in the Hope-Westwood British Collection of Coleoptera in the Oxford University Museum. One is labelled 'Coll. Hope' and the other bears a label 'Windsor Forest. F.W.H.' The latter is no doubt the example referred to by Stephens.

Prionus coriarius Linn. 'Windsor Forest. Mr. J. C. Bowring has taken several specimens this summer (1889) in this locality, all of which "emerged from roots of oak trees running along the ground, leaving holes like those of bees' nests"' (Fowler, 1890). A ♂ was taken by Miss Kirk at the foot of an oak tree, 12.viii.26. We found several females in other years, and the larvae in a birch stump; decidedly scarce. (viii.)

CERAMBYCIDAE.

Criocephalus polonicus Mots. On young burnt pine, under pine bark, and in numbers in the roots of burnt Scots pines. (v, vii, viii.)

Asemum striatum Linn. On the wing, on fir stumps, and common in Scots pine stumps. (v.)

A. striatum L. ab. *agreste* Fab. In company with the above, but much less common. (v.)

Tetropium gabrieli Weise. Remains and borings in large felled larch; very local. (vi.)

Callidium variabile Linn. 'Windsor' (Stephens, 1839). On old oak and beech logs, in oak branches and under oak bark, also on the wing; larvae abundant in dead chestnut and poplar; not common. (vi, vii.)

C. alni Linn. On the wing, by beating hawthorn and Rhododendrons, on freshly cut wood and in dead oak bough; scarce. (v, vi.)

Clytus arietis Linn. By beating hawthorn, in branch of hornbeam, on stumps and felled trees; common on stacks of wood. (v, vi, vii.)

C. mysticus Linn. On stacks of wood, on the wing, and commonly by beating hawthorn blossoms. (v, vi.)

C. mysticus Linn. ab. *hieroglyphicus* Hbst. One specimen found on net after digging in old hawthorn, 28.v.26.

Gracilia minuta Fab. By beating lime trees (Allen and Donisthorpe); scarce. (vii.)

Molorchus minor Linn. 'It has been taken near Windsor' (Stephens, 1831). Under bark of felled spruce, by sweeping, and not uncommonly by beating hawthorn blossoms. (v, vi.)

Rhagium bifasciatum Fab. Under bark of oak, common in Scots pine stumps, on the wing, by beating rhododendrons and often abundantly by beating hawthorn blossoms. (v, vi, viii, ix.)

Toxotus meridianus Panz. By beating hawthorn trees; scarce. (v, vi.)

Leptura scutellata Fab. On the wing, on beech trees, and frequent in decayed birch and beech trees. (v, vi, vii.)

L. livida Fab. Abundant by sweeping flowers and herbage. (vi.)

Strangalia revestita Linn. 'I possess specimens of this rare species . . . found in the vicinity of Windsor. Windsor, Dr. Leach' (Stephens, 1831). Windsor Forest (Desvignes); bought at the sale of his collection by the late E. W. Janson (*teste* the late Oliver Janson). There are four specimens in the Stephensian collection.

S. attenuata Linn. Windsor Forest (Desvignes); bought at the sale of his collection by the late E. W. Janson (*teste* the late Oliver Janson).

S. armata Hbst. On the wing, on dog-roses and bramble blossoms; not common. (vi.)

Grammoptera tabacicolor De Geer. By beating holly blossoms, common by beating hawthorn blossoms. (v, vi.)

G. analis Panz. By beating hawthorn blossoms; very local but sometimes abundant. (v.)

G. ruficornis Fab. Common by beating hawthorn blossoms. (v, vi.)

G. holomelina Pool. By beating crab-apple and hawthorn blossoms; scarce. (v.)

G. praeusta Fab. By beating hawthorn blossoms; local but sometimes not uncommon. (v.)

LAMIIDAE.

Leiopus nebulosus Linn. In and under chestnut, birch and oak bark; on the wing, by beating oaks and hawthorns; common. (iv, v, vi, vii.)

Pogonochaerus dentatus Fourc. By beating holly blossoms; scarce. (vi.)

Mesosa nubila Ol. 'Windsor. Dr. Leach' (Stephens, 1831). By beating hawthorn trees; scarce. (v.)

Saperda populnea Linn. I have not found the perfect insect, but have obtained the galls made by the larvae in aspen stems.

Tetrops praeusta Linn. By beating hawthorn blossoms; abundant. (v, vi.)

BRUCHIDAE.

Bruchus rufimanus Boh. By sweeping Umbelliferae, rushes, etc.; not common. (vi.)

B. rufipes Hbst. By beating lime trees; scarce. (vii.)

B. loti Payk. By beating hawthorn and by sweeping *Lathyrus pratensis*; common. (v, vi, vii, viii.)

B. villosus Fab. By sweeping; scarce. (v.)

CHRYSOMELIDAE.

Orsodacna lineola Panz. By beating hawthorn blossom; scarce. (v.)

Donacia crassipes Fab. 'On the water-lily, Windsor.—Mr. G. Waterhouse' (Stephens, 1831).

D. dentata Hopp. 'On the water-lily, Windsor.—Mr. G. Waterhouse' (Stephens, 1831).

D. versicolora Brahm. 'Frequent near Windsor. Windsor Forest.—Mr. G. Waterhouse' (Stephens, 1831). In some numbers on Arrow-head (*Sagittaria sagittifolia*); local. (vii.)

D. limbata Panz. Common on reeds, etc. (vi.)

D. obscura Gyll. 'Water-lily, Windsor.—Mr. G. Waterhouse' (Stephens, 1831).

D. thalassina Germ. On reeds; scarce. (vi.)

D. simplex Fab. By sweeping reeds, etc., round ponds; abundant. (v, vi, vii, viii.) Purple and red aberrations occur.

D. vulgaris Zach. By sweeping *Sparganium*; scarce. vii.

D. clavipes Fab. By sweeping aquatic plants; not uncommon. (vi.)

D. semicuprea Panz. With the preceding ; local. (vi.)

D. cinerea Hbst. By sweeping Bur-reed (*Spharganium ramosum*), etc. ; locally abundant. (vi.)

D. discolor Panz. By sweeping aquatic plants ; not uncommon. (v, vi.) Mostly brassy-coloured specimens taken, but purple and melanic (ab. *nigrita* Schil.) specimens occur.

Haemonia curtisi Lac. (*zosteræ* Stephens). 'It has also occurred near Windsor' (Stephens, 1931). As this species is only found in brackish water, it is probable that Stephens' record refers to the allied species.

H. appendiculata Panz. (*equiseti* Stephens). 'In the collection at the British Museum are a pair of insects bearing the above name, which were found near Windsor' (Stephens, 1931).

Zeugophora subspinosa Fab. By sweeping and beating aspens ; not common. (vii, viii.)

Lema cyanella Linn. By sweeping thistles and Dyer's Weed (*Genista tinctoria*) ; not common. (v, vii, viii.)

L. lichenis Voet. By sweeping thistles, etc. ; abundant by beating lime trees ; common. (vi, vii, viii.) A green aberration swept.

L. obscura Steph. 'Windsor.—Mr. Waterhouse.' This, judging by the size, is probably a melanic form of the above. Stephens describes it as black above, shining black-blue beneath.

L. melanopa Linn. Abundant by sweeping coarse herbage. (vi, viii.)

Crioceris asparagi Linn. One by sweeping reeds, 28.vi.35. I have hunted for it in vain on asparagus plants in the gardens of Cumberland Lodge, etc.

Clythra quadripunctata Linn. A larva was taken in a nest of *Formica rufa*, 3.v.36. I have not yet found the perfect insect.

Cryptocephalus lineola Fab. By sweeping mixed herbage, hawthorn and grass, etc. ; not uncommon. (vi, vii, viii.)

C. bipunctatus L. ab. *thomsoni* Weis. One specimen swept off Cross-leaved Heath (*Erica tetralix*), 16.vi.34.

C. aureolus Suffr. In numbers in buttercups and hawkweed. (v, vi.)

C. parvulus Müll. By sweeping young birch trees ; scarce. (viii.)

C. moraei Linn. By sweeping St. John's Wort (*Hypericum perforatum*) ; local but abundant. (vii.)

C. fulvus Goeze. By sweeping rough herbage ; scarce. (viii.)

C. pusillus Fab. By general sweeping, evening sweeping, beating oak bushes, birch, hawthorn, etc. ; very common. (vii, viii, ix.) Very variable in colour. One larva in case taken in a nest of *A. (D.) brunneus*.

C. labiatus Linn. By beating hawthorn, birch, etc., and by general sweeping; very common. (vi, vii, viii.)

C. querceti Suffr. There is a specimen in the Hope-Westwood Collection in the Oxford University Museum labelled 'Windsor F. July 17th, 1820.' On old oak trees and by beating oaks and hawthorns; not uncommon. (vi, vii, viii.) The only other British locality is Sherwood Forest.

Timarcha violaceo-nigra De Geer. On grassy paths; not uncommon, but local. (v, ix.)

Chrysomela staphylea Linn. In moss and by sweeping Wood Sage (*Teucrium Scorodonia*); scarce. (v, ix.)

C. polita Linn. Under bark of felled oak, in moss and by sweeping water-mint (*Mentha hirsuta*); common. (v, vi, vii, x, xi.)

C. hyperici Först. By sweeping grass and especially St. John's Wort; common. (vii, viii, x.)

C. lurida Linn. 'In the British Museum; captured near Windsor in June' (Stephens, 1831). There are two specimens in the drawer of doubtful British beetles in the British Museum Collection.

C. limbata Fab. 'Very rare; specimens have been taken near Windsor in June' (Stephens, 1831). There are two specimens in the Stephensian Collection.

C. violacea Goeze. 'A specimen in the collection of its captor was taken near Windsor. — J. H. Griesbach, Esq.' (Stephens, 1831). 'One from Windsor is in the collection of the late Mr. W. Garneys' (Fowler, 1890).

Melasoma populi Linn. By sweeping in willow-swamp; larvae and adults abundant on sallows. (vii, viii, ix.)

M. tremulae Fab. On young aspens; not common. (v, vi.)

Phytodecta rufipes De Geer. By beating aspens; scarce. (v.)

P. vininalis Linn. Abundant on sallows. (v.)

P. olivacea Först. In numbers by sweeping broom. (v.)

Gastroidea polygoni Linn. In sand-pit, by sweeping coarse herbage, etc.; common. (v, vi, viii.)

Plagiodera versicolora Laich. By sweeping in willow-swamp; scarce. (vi.)

Phaedon tumidulum Germ. In moss in willow-swamp, in flood-refuse; abundant by sweeping Hogweed (*Heracleum Sphondylium*). (v, vii, viii, xii.) Copper-coloured forms occur.

P. armoraciae Linn. In moss and flood-refuse; abundant on mud round ponds and on the surface of dried-up ponds. (iv, v, vi, vii, viii, x.)

P. cochleariae Fab. On banks of pond, by sweeping water-cress (*Nasturtium officinale*) and by general sweeping; common. (v, vi, vii, ix.)

Phyllodecta cavifrons Thoms. By sweeping and in plenty by beating young aspens and poplars. (v, viii.)

P. vitellinae Linn. By beating willows and young poplars; common. (v, vi, vii, viii, x.)

Prasocuris phellandrii Linn. By dragging in pond; scarce. (iv.)

Phyllobrotica quadrimaculata Linn. Plentiful on the common Skull-cap (*Scutellaria galericulata*); local. (viii, ix.)

Luperus rufipes Scop. 'On the birch, not common near Windsor.—Mr. G. Waterhouse' (Stephens, 1831). By beating rhododendrons and hawthorn; abundant by beating young birch trees. (v, vi, vii.)

L. flavipes Linn. By beating birch, hawthorn and mountain ash; common. (v.)

Lochmaea capreae Linn. By sweeping in damp spot and beating hawthorn; abundant on willows. (v, vi, viii.)

L. suturalis Thoms. In sand-pit; abundant by sweeping grass and heather. The ab. *nigrita* Weise occurs with the typical form. (iii, iv, v, viii, ix.)

L. crataegi Först. Abundant by beating hawthorn blossoms. (iv, v, vi.)

L. crataegi Först. ab. *flavus* Donis. By beating birch and hawthorn; scarce. (vii, viii.)

Galerucella nymphaeae Linn. By sweeping reeds, rushes, *Polygonum amphibium*, etc.; common on yellow water-lily leaves (*Nuphar luteum*). (vii, viii.)

G. sagittariae Gyll. By sweeping sedge, etc., round mere; local and scarce. (ix.)

G. lineola Fab. By sweeping sedge; scarce. (vii.)

G. pusilla Duft. By sweeping in willow-swamp; not common. (vii.)

Adimonia tanacetii Linn. By sweeping short grass; scarce. (vii.)

Longitarsus holsaticus Linn. 'Windsor' (Fowler, 1890). It is not recorded by Stephens and I do not know the source of Fowler's record. Hitherto I have been unable to find the species.

L. castaneus Fowler (= *castaneus* Foudras nec Duft., *brunneus* Duft.). By sweeping in willow-swamp; scarce. (ix.)

L. luridus Scop. By sweeping ragwort, grass, etc.; very common. (v, vi, vii, viii, ix, x.) A form occurs in numbers by beating lime trees.

L. suturellus Dufts. By sweeping in damp places, ragwort, thistles in flower, etc.; common. (viii, ix, x.) The ab. *fuscicollis* Steph. occurs with the typical form, but more sparingly.

L. atricillus Linn. By sweeping; not common. (v, viii, ix.)

L. melanocephalus All. By sweeping herbage; not common. (viii, ix.)

L. nasturtii F. ab. *obscura* Donis. I have taken this insect in considerable numbers by sweeping Comfrey (*Symphytum officinale*) in one field. This is the only locality known anywhere at present. It should perhaps be regarded as a subspecies, as the typical form does not occur with it, nor, as far as I know, in the Windsor area at all. (vi, vii.)

L. lycopi Foudr. By sweeping wood-sage (*Teucrium Scordonia*), etc.; scarce. (x.)

L. membranaceus Foudr. By sweeping wood-sage; scarce. (x.)

L. waterhousei Kuts. By sweeping; scarce. (vii.)

L. flavicornis Steph. By sweeping in willow-swamp; abundant by beating *Convolvulus* (*Convolvulus arvensis*) in hedges. (vi, vii, viii, ix.)

L. exoletus Linn. By sweeping Hound's Tongue (*Cynoglossum officinale*); very local but common where it occurs. (vi, vii.)

L. pusillus Gyll. By sweeping in willow-swamp, plantations, etc.; not common. (viii.)

L. jacobaeae Wat. Common by sweeping ragwort (*Senecio Jacobaea*); the ab. *rufescens* Fowl. occurs with it, but more sparingly. (viii, x.)

L. laevis Duft. By sweeping in willow-swamp; abundant by sweeping Wild Chamomile (*Matricaria Parthenium*). (vii, viii.)

L. pellucidus Foudr. In moss in willow-swamp and in some numbers on *Convolvulus arvensis* in the same place. (ix, x.)

Haltica lythri Aubé. Very local, but abundant by sweeping Purple Loosestrife (*Lythrum Salicaria*). (vi.)

H. britteni Sharp. By sweeping Bell-heather (*Erica cinerea*); scarce. (ix.)

H. ytenensis Sharp. By sweeping Bell-heather; not common. (viii.)

H. oleracea L. In fern-refuse; abundant by sweeping Willow-herb (*Epilobium montanum*). (v, vi, viii, ix, xi.)

H. pusilla Dufts. By sweeping; scarce. (v, x.)

Phyllotreta nodicornis Marsh. Abundant by sweeping Wild Mignonette (*Reseda lutea*); once swept in willow-swamp. (vi, vii.)

P. nigripes F. By sweeping in plantations and avenues; abundant by sweeping Shepherd's Purse (*Capsella Bursa-Pastoris*) and Hedge Mustard (*Sisymbrium officinale*). (vi, viii, ix, x.)

P. consobrina Curt. By sweeping Cruciferae in field, scarce; abundant by sweeping cabbages in garden; very local. (vi, vii, viii.)

P. punctulata Marsh. By sweeping; scarce. (vii, viii.)

P. atra Payk. In flood-refuse, in moss in willow-swamp, by sweeping *Sisymbrium officinale*, etc.; common. (iv, v, vi, viii, ix, xii.)

P. diademata Foudr. By sweeping *S. officinale*, etc.; one specimen by beating larch; scarce. (v, vii, viii.)

P. cruciferae Goetz. By sweeping Shepherd's Purse, Hedge Mustard, cabbages, etc.; common and abundant. (vi, vii, viii, ix.)

P. vittula Redt. By sweeping Garlic Mustard (*Alliaria officinalis*), etc.; not uncommon. (v, viii, ix.)

P. undulata Kuts. By sweeping Garlic Mustard, cabbages, etc.; common. (v, vi, vii, viii, ix, x.)

P. nemorum L. By sweeping; not common. (vi, viii.)

P. ochripes Curt. By sweeping Garlic Mustard, etc.; scarce. (iv, vii.)

P. tetrastigma Corn. By sweeping Cuckoo Flower (*Cardamine pratensis*); not uncommon. (v, vi.)

P. exclamationis Thunb. By sweeping in damp spots; scarce. (v, vi.)

Aphthona venustula Kuts. Abundant by sweeping Wood-spurge (*Euphorbia amygdaloides*). (iv, v, vi, vii, ix, x.)

Sphaeroderma testaceum F. By sweeping thistles in flower and by general sweeping; common. (vii, viii.)

S. cardui Gyll. By sweeping thistles, Dyer's Weed (*Genista tinctoria*), Knapweed (*Centaurea nigra*), etc.; not as common as the preceding. (vii, viii, x.)

Apteropeda orbiculata Marsh. In flood-refuse and by general sweeping; not uncommon. (iv, v, vii, viii, ix, x.)

Podagricra fuscicornis L. By sweeping mallows (*Malva sylvestris*); very local and not common. (vii.)

Mantura rustica L. By sweeping; scarce. (vii.)

M. obtusata Gyll. 'Windsor' (Fowler, 1890).

M. matthewsi Curt. 'It has also occurred . . . near Windsor' (Stephens, 1835).

M. matthewsi Curt. var. *helianthemii* Curt. 'Windsor' (Stephens, 1839).

Crepidodera transversa Marsh. By general sweeping; very common. (vi, vii, viii.)

C. ferruginea Scop. By sweeping thistles in flower and by general sweeping; equally common with preceding. (vi, viii, ix.)

C. rufipes L. 'Taken near Windsor—Mr. G. Waterhouse' (Stephens, 1831). By sweeping; not common. (vi, vii.)

C. helxines L. By beating tallows and aspens, and sweeping in willow-swamp; not common. (vi, viii.)

C. chloris Foudr. By sweeping in willow-swamp; not common. (vii, viii.)

C. aurata Marsh. Abundant by beating aspens, tallows, willows and poplars. (iv, v, vi, vii, viii, ix, x.)

C. smaragdina Foudr. By sweeping and beating aspens; not common. (v, vi.)

Chaetocnema subcoerulea Kuts. By sweeping reeds, etc.; common. (v, vi, vii, viii, ix.)

C. arida Foudr. By sweeping in damp places; rare. (vii.)

C. confusa Boh. By sweeping sedges, etc.; rare. (ix.)

C. hortensis Fourc. In flood- and reed-refuse, moss in willow-swamp, etc.; common by sweeping. (v, viii, ix, x, xii.)

Plectroscelis concinna Marsh. In moss in willow-swamp, by beating tallows, and abundant by sweeping mixed herbage. (iv, vi, viii, ix, x.)

Psylliodes chrysocephala L. By sweeping Cruciferae; not uncommon. (vi, vii.)

P. napi Koch. In flood-refuse, in moss in willow-swamp and by sweeping; not uncommon. (iv, v, viii, ix, xi.)

P. affinis Payk. Abundant by sweeping Woody Nightshade (*Solanum Dulcamara*). (vi, vii, viii, ix.)

P. dulcamarae Koch. By sweeping Woody Nightshade; local. (vi, viii.)

Cassida fastuosa Schall. 'It has occurred in the vicinity of Windsor' (Stephens, 1831).

C. nebulosa L. Abundant by sweeping White Goose-foot (*Chenopodium album*); very local. (viii.)

C. vibex F. By sweeping thistles; not common. (v, vi, viii, ix.)

C. vittata Vill. One in flood-refuse, 20.xii.29. This is usually a coast species.

C. nobilis L. By sweeping short herbage and abundant by sweeping White Goose-foot. (v, viii.)

C. flaveola Thunb. By sweeping Dyer's Weed and mixed herbage; rather common. (viii, ix.)

C. equestris F. Abundant on Water Mint (*Mentha hirsuta*) and Gipsy-wort (*Lycopus europaeus*). (viii, ix.) A number of the larvae were taken and many adults were reared. Many of the larvae were parasitised by the small Chalcid *Tetrastichus miser* Nees, which emerged in numbers.

C. viridis L. In flood-refuse and by sweeping Water Mint; common on thistles. (vi, vii, viii, ix.)

TENEBRIONIDAE.

Heledona agaricola Hbst. This beetle occurs in abundance in the 'Sulphur Bracket' fungus (*Polyporus sulphureus*). (iii, v, vii, viii, ix, x.)

Tenebrio molitor L. In yard and workshops of the Crown Estate Office, 2.ix.25, 5.vii.30.

Hypophloeus bicolor Ol. Under elm bark in burrows of *Scolytus destructor*, in burrows of *Dryocoetes villosus* in oak bark, and in wood of decayed beech; not uncommon. (iv, vi, vii, viii.)

H. fraxini Kug. In a burrow of *Tomicus suturellus* in a felled Scots pine pole and in the greatest profusion, with its larvae, under the bark of a number of large felled Scots pines infested by *Tomicus laricis*, *T. suturellus*, etc. (viii, ix, x, xi.)

H. linearis F. By beating cut fir tops and in the burrows of *Tomicus bidens*; rather rare. (v.)

Helops striatus Fourc. In numbers under all kinds of bark. (v, viii, ix, xi, xii.)

LAGRIIDAE.

Lagria hirta L. By sweeping and beating lime trees; not at all common. (vii.)

CISTELIDAE.

Cistela ceramboides L. By beating hawthorn and oak branches; scarce. (vi, vii.)

C. murina L. By beating elder blossoms and sweeping *Matri-caria*; not common. (vi.)

Eryx ater F. Under bark; larvae in numbers in wood-mould of oak, in jackdaw's and other birds' nests. Larvae taken 14.ix.25 and put in nest-refuse, frass, etc., in tin; emerged as perfect insects 20.vi.26. (vi, vii.)

Mycetochares bipustulata Ill. In dry wood-mould in hole in ash tree, in beech stumps, under beech bark and on beech logs, also by brushing in hollow trees; not common. (v, vi, vii.)

MELANDRYIDAE.

Tetratoma fungorum F. In decaying fungi on trees, 'Birch Bracket,' 'Sulphur Bracket,' etc.; common and often abundant. (iii, iv, ix, x, xi, xii.)

T. desmaresti Latr. In cobweb, in bits of fungoid oak bark chipped off large tree, etc.; rare. (x.)

Orchesia micans Panz. In 'Poor Man's Beef' fungus (*Fistularia hepatica*), Great Polyporus (*Polyporus giganteus*) and the Dryad (*P. dryadeus*), with its pink larvae; common and often abundant. (vi, vii, viii, ix.)

Clinocara tetratoma Th. By sweeping, beating *Prunus* blossoms, several specimens cut out of a small dead bough; rare. (iv, v, viii.)

C. undulata Kr. In *Polyporus giganteus* on old beech tree; scarce. (ix.)

Hallomenus humeralis Panz. In wood-mould in hole in oak tree, several behind 'Sulphur Bracket' on oak; scarce. (vii, ix.)

Conopalpus testaceus Ol. In boughs and old branches, on felled oak and in old hawthorn, by beating oak and lime trees; not common. (vi, vii, viii.)

Melandrya caraboides L. In hollow beech, on grass stem and on the wing; not common. (v, vi, vii.)

Anisoxya fuscula Ill. By beating and sweeping under lime trees; rare. (vii, viii.)

Abdera bifasciata Marsh. One taken by Miss Kirk on the trunk of an oak; a certain number by beating lime trees. (vi, vii, viii.)

Phloeotrya rufipes Gyll. Under bark of and in oak, beech and ash trees, on felled oaks, etc.; not uncommon. (v, vi, vii, viii.)

Marolia variegata Bosc. 'A single example of this insect is in the collection of the British Museum, captured, I believe, near Windsor' (Stephens, 1832). There is a specimen in the drawer of doubtful British Coleoptera in the British Museum.

Osphya bipunctata F. 'One of these was taken near Windsor in June, 1816' (Stephens, 1832).

O. bipunctata F. var. ♂ *clavipes* Ol. (*anceps* Steph.). 'On whitethorn blossoms; Windsor' (Stephens, 1839).

A NEW SPECIES OF *PARANDROCEPHALUS* FROM JAVA
(COL., CERAMBYCIDAE).

BY K. G. BLAIR, D.SC., F.R.E.S.

***Parandrocephalus drescheri* sp. nov.**

Pitchy black, with the basal two-fifths to one-third of the elytra, the occipital region, the basal five or six joints of the antennae, the femora near base, the tibiae (except at base) and the tarsi (except the claw joint of the four posterior legs) bright testaceous; apical two-fifths of the elytra greenish-black, densely and finely punctate and pubescent, the pale basal area being much more coarsely punctate.

♂. Head massive, almost as wide as the greatest width of thorax, genae subparallel, as wide in front as the temples behind the eyes, mandibles acutely produced, sinuate, crossing when at rest; thorax more densely punctate, but without areas of sexual puncturation. Length 42 mm.



Parandrocephalus drescheri ♂ ♀ × 1.

♀. Head less massive, not wider than front of thorax, genae straight, slightly converging before eyes; mandibles tapering, acute, meeting at apex, about half as long as those of ♂; antennae similar to those of ♂. Length 45 mm.

HABITAT: Java, Mt. Tangkoeban Prahoe, 4,000 to 5,000 ft., vi and vii. 1930-37. *F. C. Drescher.*

Type and allotype in the British Museum, paratypes in Coll. *F. C. Drescher.*

Mr. Drescher informs me that the beetles were obtained from a tree of which the native name is 'pohon madja,' probably *Lap-*

lacea integerrima Miq. or *Gordonia excelsa* Bl., both Theaceae, but that the trees from which they were obtained have now all been cut down.

Evidently closely allied to *P. eversor* Heller,* from Sumatra, from which it differs mainly in colour. The pubescence in the new species takes the colour of the background, though when the head is raised so as to conceal the yellow base the golden fringe of the front margin of the prothorax shows against a dark ground.

The ♀ bears a remarkable superficial resemblance to *Pachyteria bicolor* Parry, also from Java, but there are numerous differences in structure, e.g. the head in *P. bicolor* is smaller and similar in the sexes, the scape of the antennae spinose at apex, the mandibles are shorter and approximate at base, the thorax in the ♂ bears pad-like areas of sexual puncturation, and the elytra are similarly punctured on both pale and dark areas.

From *P. borrei* Rits. it differs in much the same characters.

Professor Heller, erroneously supposing that his unique specimen was a ♀, allied his genus with the African genus *Dictator* Thoms. No doubt it is so related, but the relationship cannot be very close, for the ♂ in *Dictator* has areas of sexual puncturation on the thorax somewhat similar to those of *Pachyteria bicolor* and certain allied species, e.g. *strumosa* Pasc. (of which *insignita* Pasc. is the ♀), *ochracea* Waterh. (of which *apicalis* Van de Poll is a variety) and perhaps others for which a new genus appears to be required.

In Gahan's key to the Indian genera of the Callichromini † it would run down to *Niraeus* Newm., with which indeed it is very closely allied, presenting the same characters but to a more exaggerated degree, e.g. the head in *Niraeus* has the same structure, though less prolonged before the eyes, and is sexually dimorphic, though to a very much less degree; also there is a similar difference in texture between the pale and dark areas of the elytra. *Niraeus*, moreover, is not so elongate, and has the posterior femora reaching more nearly to the apex of the elytra.

* Heller, K. M., 1915, Tijds. v. Ent. 58: 101-104, Pl. v, fig. 1.

† Gahan, C. J., 1906 Fauna of Brit. India, Col. 1, Cerambyc., 189.

THE PARASITES OF BRITISH BIRDS AND MAMMALS. XIX. FURTHER
RECORDS OF *ORNITHOMYIA* spp. FROM BRITISH BIRDS,
TOGETHER WITH NOTES.

BY GORDON B. THOMPSON.

In No. XI* of this series of papers published last year I gave numerous detailed records of the occurrence of two species of *Ornithomyia* (Diptera, Hippoboscidae) on birds in the British Isles and drew attention to certain points regarding the range of hosts parasitised by the two species. Having now accumulated another fifteen records, I am presenting them below, together with a number of hitherto unpublished records from Mr. H. Britten's collection, in the same detailed manner as before. I still feel that we cannot have too many records with complete data in order to enable us to draw any definite conclusions as to the limitations of the number of host species parasitised by these two interesting blood-sucking dipterous parasites and their habits. I wish to record my thanks to Mr. H. Britten for his kindness in allowing me to include the records from his collection.

Through the kindness of Dr. Jos. Bequaert I have recently had the opportunity of reading a paper by C. W. Johnson entitled 'Some notes on certain of the Hippoboscid Flies' published in 1929 (April) in the Bulletin of the North-Eastern Bird-Banding Association, Vol. V, No. 2, pp. 49-52. Unfortunately this interesting paper is difficult to obtain, and it seems to have been overlooked in consequence. In this paper attention is drawn, among other things, to the apparent preferential parasitism by *Ornithomyia* of juvenile birds and the fact that an analysis of the data relative to fifty records shows that almost all the specimens were collected between July 9th and September 28th in New England. No flies were found on birds shot during spring migration, nor were any found on a very considerable number of birds examined at the bird-banding stations during the winter months. Summarising the observations concerning *Ornithomyia anchineuria* † Speiser, Johnson says: 'This fly is confined to the strictly migratory species (its occurrence on other birds being accidental); that the fly probably reproduces only in the summer and early autumn, usually depositing its pupa in the nest of its host. The fly on emerging from the pupa naturally seeks the fledglings and is slow in deserting a young for an adult bird. The parent flies which

* Ent. mon. Mag., 1937, pp. 47-51.

† This species is in all probability the same as *O. fringillina* Curtis (Dr. Bequaert *in litt.*).

were on the adult birds probably die after depositing at most two pupae.' In a recent paper by Herman (1937) most, if not all, of Johnson's observations are confirmed by additional data.

During the past year I have made efforts to solicit the help of some of the large number of people who are engaged in bird-ringing in the British Isles. Only a comparatively small number of specimens were forthcoming but the data are of interest. It is to be hoped that as a result of my recent notes in Brit. Birds (1938, XXXI, p. 360) more specimens will be forthcoming during the present year.

With regard to the range of hosts of the two species in the light of the additional records contained in the present paper, nothing additional can be stated; in fact, the present records merely substantiate the previous conclusions.

An analysis of all the records to date shows that these two species of *Ornithomyia* have been taken from birds during the period from April to November. They are most abundant during July, August and September. The following table shows an analysis of sixty records containing actual dates of capture:—

Month:—	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
No. of Records	1	1	6	16	21	10	3	2

Of the twenty-six records contained in this paper six are definitely stated as having been taken from immature birds. Of the remaining records I have no definite information as to whether the hosts were adult or juvenile birds.

One interesting point, concerning which I am anxious to have data, is the extent to which the *Ornithomyia* spp. (or any other species of Hippoboscidae) parasitic on birds are carried by migratory birds either when arriving in this country or when leaving the country. It seems extremely probable that the greater number of these parasites overwinter in the nests of their hosts as puparia. This seems more likely when one considers that some of the parasitised birds migrate to this country from other continents (e.g. Africa), where the particular parasites in question are not known to occur to date.

With reference to the question of the extent to which birds are parasitised by *Ornithomyia* spp. in the British Isles there are no data available.

Records of the finding of the puparia of *Ornithomyia* spp. are rare, and in view of this it will be interesting to learn the extent to which they are found in birds' nests. It is possible that some puparia are deposited by the flies while on the hosts, and these

probably fall to the ground and may or may not give rise to adult flies. In all probability the greater number of puparia are normally deposited in the nests of the birds. The following records are therefore of interest:—

- (1) Puparia found in nest of *Turdus e. ericetorum* Turton (Song Thrush), Cheshire, Frandley; adults emerged 3.iv.1900 (A. W. Boyd coll.).
- (2) Puparia found in owl's nest (species of owl not stated), Staffordshire, Hawksmoor, emerged, 16.iii.1929 (H. W. Daltry coll.).
- (3) Puparia found in nest of *Parus caeruleus obscurus* Pražák (Blue Tit), Berkshire, Windsor Forest, 7.viii.1929 (H. St. J. Donisthorpe coll.).

The first two records refer to *O. avicularia* (Linn.), the third, in all probability, to *O. fringillina* Curtis. The dates of emergence of the specimens recorded in the first two are rather early, but this is probably the result of keeping the puparia at room temperature.

Family of Host.	Scientific and Common Name of Host.	Locality.	<i>Ornithomyia</i>	
			<i>avicularia</i> (L.).	<i>fringillina</i> Curtis.
CORVIDAE.	<i>Corvus monedula spermologus</i> (Vieill.) (Jackdaw).	Ireland, W. Galway, Kilcornan, 14.vii.1934 (E. O'Mahony).	1 ♀	—
STURNIDAE.	<i>Sturnus v. vulgaris</i> Linn. (Starling).	Kent, Hartley, Longfield, 15.viii.1937 (A. Clark).	1 ♂	—
FRINGILLIDAE.	<i>Emberiza s. schoeniclus</i> (Linn.) (Reed-Bunting ♂ juv.).	Scotland, E. Renfrewshire, 21.vi.1937 (P. A. Clancey).	—	1 ♀
MOTACILLIDAE.	<i>Anthus pratensis</i> (Linn.) (Meadow Pipit juv.).	Skokholm I., 1.vii.1937.	—	1 ♀*
	<i>Anthus spinoletta petrosus</i> (Montagu) (Rock-Pipit juv.).	Skokholm I., 28.vi.1937.	—	1 ♂*
	ditto.	Skokholm I., 1.vii.1937.	—	1 ♀*

* These parasites were flying freely from one Pipit to another at the time of capture.

SYLVIIDAE.	<i>Sylvia c. communis</i> Latham (Whitethroat).	Skokholm I., 19.viii.1937.	—	1 ♀
	<i>Sylvia n. nisoria</i> (Bechstein) (Barred Warbler).	Isle of May, 12.vii.1937 (M.O.C.).†	—	1 ♀

† This appears to be an instance of an *Ornithomyia* accompanying a host on migration.

Family of Host.	Scientific and Common Name of Host.	Locality.	<i>Ornithomyia avicularia fringillina</i> (L.). Curtis.	
			(L.).	Curtis.
TURDIDAE.	<i>Turdus m. merula</i> Linn. (Blackbird adult).	Kent, Hartley, Longfield, 13.viii.1937 (<i>A. Clark</i>).	1 ♂	—
	ditto.	Wiltshire, West Lavington, v.1937 (<i>B. W. H. Clouston</i>).	1 ♀	—
	ditto.	Cheshire, Bowdon, 5.vii.1917 (<i>T. A. Coward</i>).	×	—
	<i>Turdus ericetorum philomelus</i> Brehm. (Song Thrush).	Kent, Hartley, Longfield, 19.viii.1937 (<i>A. Clark</i>).	2 ♂♂, 1 ♀	—
	ditto.	Kent, Hartley, Longfield, 28.viii.1937 (<i>A. Clark</i>).	1 ♀	—
	ditto.	Cheshire, Wilmslow, 19.vi.1933 (<i>E. Cohen</i>).	×	—
	ditto.	Cheshire, Gt. Budworth, 7.viii.1930 (<i>A. W. Boyd</i>).	×	—
	<i>Erithacus rubecula melophilus</i> Hart. (Robin adult).	Kent, Hartley, Longfield, 4.x.1937 (<i>A. Clark</i>).	—	1 ♀
	<i>Oenanthe o. oenanthe</i> (Linn.) (Wheatear juv.).	Skokholm I., 5.vi.1937.	—	1 ♀
	ditto.	N. Wales, 10.viii.1895 (<i>R. Newstead</i>).	—	×
CUCULIDAE.	<i>Picus viridis vrescens</i> (Brehm.) (Green Woodpecker juv. ♀).	Radnorshire, Boughrood, 3.viii.1925 (<i>J. G. Williams</i>).	1 ♀, 1 ♂	—
	<i>Cuculus c. canorus</i> Linn. (Cuckoo juv.).	Skokholm I., 20.vii.1937.	1 ♂, 1 ♀	—
STRIGIDAE.	<i>Strix aluco sylvatica</i> Shaw (Tawny Owl).	Cheshire, Stockport, 4.viii.1931 (<i>H. Britten, Jr.</i>).	×	—
	<i>Carine noctua vidalii</i> (A. E. Brehm) (Little Owl).	Staffordshire, Wolverhampton, 9.xi.1932 (<i>C. L. Butler</i>).	×	—
FALCONIDAE.	<i>Accipiter n. nisus</i> (Linn.). (Sparrow Hawk ♀).	Ireland, Co. Cavan, Cornafean, vii.1937 (<i>R. C. Faris</i>).	2 ♂♂, 1 ♀	—
	ditto.	Cumberland, Gt. Salkeld, 29.vii.1912 (<i>H. Britten</i>).	×	(2 specs.) —
COLUMBIDAE.	<i>Columba p. palumbus</i> Linn. (Wood Pigeon).	Cumberland, Skirwith, 27.ix.1924 (<i>H. Britten</i>).	×	—
TETRAONIDAE.	<i>Lagopus s. scoticus</i> (Latham) (Red Grouse ♂).	Radnorshire, Llanbwchllyn, 16.x.1935 (<i>J. G. Williams</i>).	—	1 ♀
	ditto.	Argyllshire, Inverary, viii.1936 (<i>J. C. Campbell</i>).	—	11 ♀♀

N.B.—In the case of the records taken from Mr. H. Britten's collection, the sexes and numbers of the parasites are not available. I have therefore indicated the species of *Ornithomyia* present on the host by a x.

REFERENCE.

HERMAN, C. M. (1937). Bird-Banding, VIII (4), pp. 160—166.

53 Arodene Road, London, S.W.2.

March 26th, 1938.

Gyrophaena affinis Sahlb. in carrion traps.—Finding the mutilated carcase of a blackbird, probably the remnants of the repast of a hawk, lying on the road in a lane at South Brent in June last, I wrapped it in a handful or two of grass and placed it on the adjacent hedge as a trap for beetles. A few days later I was pleased to observe, amongst the quantity of insects attracted, a number of small, stout Staphylinids which aroused my curiosity. Being already late for my return home, and also desirous of being certain as to the habitats of these beetles, I scooped the entire capture into a clean $3\frac{1}{2}$ in. by 1 in. glass tube. On examination, the small Staphylinids proved to be *G. affinis* Sahlb., and, the habitat being so unusual, I record it. A few days afterwards another specimen of this species occurred in a dead mole and grass trap. It may be remarked that fungi were extremely scarce in the district.—JAMES H. KEYS, 9 Hillside Avenue, Plymouth: December 27th, 1937.

Aberrations of Bembidion and Agonum at South Brent, South Devon.—When staying with farmer friends at S. Brent, during part of May and June last year, one of the household brought me, in his matchbox, a beetle he had caught in a field of mangold seedlings about to be hoed. This proved to be the ab. *coeruleo-tinctum* Reitt. of *Bembidion lampros* Hbst. By dint of some two hours' search daily (which was as long a strain as my health would permit) for a fortnight, and with the help of my friends whilst engaged in hoeing, I succeeded in obtaining seven examples of the aberration. One evening the boys, on returning from the field, spoke of the intense heat of the afternoon, and said that I ought to have been there, as small beetles had been swarming. The sky was now cloudy, a thunderstorm was evidently brewing, nevertheless I went over to the field, which was not far away, but not a beetle was then visible. A little later the storm broke in the distance, well away from the farm. Swarming of the beetles was not observed again. To find beetles occurring in such quantity all over a cultivated field was a new experience to me, and I wished to discover if possible the reason for it. So I carefully searched the seedlings, which I found to be quite healthy and free of any insect pest as far as I could see, nor could I in the earth about or near them find any probable source of attraction for beetles. There was, however, a very small spider, in size perhaps not half that of the Bembids, in abundance, and this was all I could find. I did not see the beetles attack it. During the few last days of my visits to the mangolds *Trechus 4-striatus* Schrank made its appearance pretty freely, some of them very immature, so that probably they were bred in the field or nearby and were not specially attracted to it.

From another seedling mangold patch, some three or four fields away from the one already dealt with, one of the boys brought me a few beetles he had taken there whilst hoeing; amongst them was a specimen of the ab. *coerulescens*

Letz, of *Agonum mülleri* Hbst. This insect is, I think, an addition to our List, and as I have previously taken (in May, 1915) the ab. *tibialis* Heer, near Eadover Bridge, it is interesting to note that both aberrations occur on the edge of Dartmoor. I now devoted my attention to this new patch of mangold seedlings, but failed to secure any more var. *coerulescens*; nor did I find any examples of the *Bembidion*, although this field is hardly a quarter of a mile distant from the first, which also yielded a dozen *B. 4-maculatum* L. and *Notiophilus substriatus* Wat. and *biguttatus* F., of which I bottled one or two for identification only.—JAMES H. KEYS: December 28th, 1937.

Hymenoptera and the early Spring, 1938.—I read with interest the observations on Aculeate Hymenoptera recorded by Mr. K. M. Guichard on p. 114 of this Magazine. The following are some notes of my own experiences of this spring.

Andrena bicolor (Fabr.). Several ♀♀ were seen flying over a sandy bank at Rowney Warren (Beds.) on March 6th, no ♂♂ being observed. A single ♂ was taken at Whipsnade on March 19th. Previous earliest records are ♀♀ alone at Clophill 21.3.36, and ♂♂ Totternhoe 21.4.35, when ♀♀ were freshly emerged on the same date. In the early spring I have often found this bee, freshly emerged and with perfectly clean scopae, often in company with ♀♀ of *A. thoracica* (Fabr.), and without any sign of the opposite sex.

Andrena clarkella (Kirby). Studham, March 13th, both sexes, ♀♀ evidently collecting off willows.

Andrena apicata Smith. Studham and Whipsnade, March 13th, freshly emerged and in great abundance, the ♀♀ evidently searching for nectarification sites and ♂♂ sunning themselves on tree-trunks, palings, etc. On March 19th provisioning of burrows by this species was well under way, although the willows were almost over, having commenced flowering late in February. Usually this plant lasts in bloom well into the following month, so that it would appear that the effective life of this *Andrena* has been very short this year, failing other sources of provision.

Nomada leucophthalma (Kirby). Whipsnade, March 13th, in both sexes, accompanying the previous species, and taken at its burrows a week later.

These last three species are new to me in Bedfordshire, so that previous records of appearances are lacking.

Andrena bimaculata (Kirby). Both sexes at Clophill, Rowney Warren and Sandy (on *Ulex*), March 20th. The previous earliest record I have for the first brood is Rowney Warren, 11.4.37.

Andrena haemorrhoa (Fabr.). ♀ collecting at Wheathampstead (Herts.), March 31st. Previous earliest in this sex, Luton, 21.4.30.

Andrena armata (Gmelin). Old Warden, ♀♀, April 10th. Previous earliest record, Luton, 21.4.30, on blackthorn. Owing to the early termination of the flowering of blackthorn, this species appears to have been driven from its favourite flower to others like those of the crab-apple, which, of course, usually blooms much later.

Osmia rufa L. Wheathampstead, March 30th, one ♀. This is rather extraordinary, as I have never previously taken this bee before the first week in May.

On April 30th I paid a visit to a field of dandelions near Totternhoe where *Osmia bicolor* (Schr.) is usually to be found in great abundance. Although the sun was shining, only a few worn ♂♂ were taken. This species is another of the earlier bees: the ♂♂ appear from March 21st onwards, the ♀♀ towards the middle of April. Although an earlier visit to the locality was not paid, it

would appear that the inclement April weather, following a probably very early emergence in both sexes, had caused a very high mortality. One wonders what will happen during this May to the bees which normally swarm on the hawthorn, as most of the flowers this year seem to have been killed or at least aborted while still in the arrested buds.

Diprion sertifer (Geoffr.). Larvae, just emerged from the egg, were found on a plantation near Woburn on April 15th, compared with May 8th of last year. It was quite evident that a large number were being killed off in the first instar, probably by the prevailing night frosts and the dry state of the Scots fir needles upon which they were feeding.—V. H. CHAMBERS, 47 Westbourne Road, Luton, Beds. : May 6th, 1938.

Metalyte fragilis (Pict.) in Yorkshire and Derbyshire.—I was fortunate in capturing several males of the apparently rare Trichopteron *Metalyte fragilis* (Pict.) at Malham (Mid-West Yorkshire, V.C. 64), 2.7.35 and 25.7.35, and again in Padley Wood near Grindleford (Derbyshire, V.C. 57) 6.7.35. The species has long been known from Ireland (Proc. Roy. Irish Acad., 1910), but there seems to be only one previously published record for England (R. Test, Hampshire). My thanks are due to Mr. D. E. Kimmins for confirming my determination and for calling my attention to the Hampshire record.—JAMES M. BROWN, 176 Carter Knowle Road, Sheffield : May 14th, 1938.

Reviews.

‘FAUNISTISCHER FÜHRER DURCH DIE COLEOPTEREN-LITERATUR.’ VON S. SCHENKLING.

A guide, from the geographical standpoint, to the widely scattered literature on the Coleoptera cannot fail to be an outstanding boon to all workers in this order. The announcement of the forthcoming appearance of Vol. I will be hailed with interest by all Coleopterists. The work is to appear in parts, to be complete in four volumes of nine or ten parts each. Vol. I will comprise the literature dealing with the European fauna, Vol. II with that of Palearctic Africa and Asia, Vol. III of the Ethiopian region, Australia and Oceania, Vol. IV of America. Subscription price RM.6 per part, from Verlag Gustav Feller, Neubrandenburg, or any bookseller.

‘SYSTEMATIC NOTES UPON BRITISH AQUATIC COLEOPTERA.’ Being a Corrected and Revised Edition of a Series of Papers which appeared in the ‘Entomologist’s Monthly Magazine’ from 1934 to 1936. By FRANK BALFOUR-BROWNE, M.A. (Oxon et Camb.), F.R.S.E., F.R.E.S., etc. Volume I, Hydradephaga. London: Nathaniel Lloyd & Co. Ltd. 1938. pp.1—95, text-figures 1—29. Price 3/6.

This excellent series of articles on the British genera and species of this somewhat difficult but highly interesting group of our indigenous beetles has met with due appreciation by our Coleopterists during its appearance in the pages of our Magazine, and is now presented in a fully revised and extended form in a well-produced little volume, which should be in the hands of all serious workers in this Order of Insects. Its outstanding value certainly resides in the successful endeavour by the author to clear up the more than usually complicated and entangled synonymy of this section of the Coleoptera; and to quote his words in the Introduction, ‘When I began the work which is now set forth in its final form in this book . . . I did so because I hoped

to achieve something approaching finality in the list of our British water-beetles.' And further, 'Therefore I feel that we who desire stability are getting something fundamental in this work, and I suggest that those of us who are not obsessed by the sanctity of the law of priority should accept the lists and regard them as lists of "nomina conservanda" of the British species.' But besides this highly desirable piece of work, the structural details of the genera and species of the group are in many cases fully discussed and illustrated by excellent text-figures; while a list of the British species of each genus appears under their finally recognised names, and a full bibliography and index complete this valuable contribution to our knowledge of the water-beetles indigenous to the British Islands.

As announced in the Introduction, a similar volume on the Hydrophilid water-beetles, to which we look forward with much interest, is in preparation by the author and his son Mr. J. Balfour-Browne, of the Natural History Museum; and some papers on the group by the last-named promising worker have already appeared in the current volume of this Magazine.

Obituary.

Edward Meyrick, B.A., F.R.S., whose name for many years past has been a household word with the students of the Micro-Lepidoptera throughout the world, passed away on March 31st at his residence at Thornhanger, Marlborough, Wilts, in the eighty-fifth year of his age. The son of the Rev. Edward Meyrick of Ramsbury, Wilts, he was born on November 24th, 1854, and was educated at Marlborough College and at Trinity College, Cambridge. From an early age the Lepidoptera, and especially the smaller forms of the Order which formed the basis of his life-work, occupied his interest and attention, and his first published note on the subject appeared in the pages of our own Magazine in March, 1875 (Vol. XI, pp. 237-8), recording the capture for the first time in Britain of a Crambid moth, *Myelois cirrigerella* Zk., at light near Marlborough.

In 1877 Meyrick left England in order to take up a scholastic post at Sydney, New South Wales, proceeding some years later to a similar post at Christchurch, New Zealand. In both these regions he found himself in a practically unworked and astonishing rich Micro-lepidopterous fauna, and the characteristic energy and thoroughness with which for ten years he devoted himself to its collection and study, resulted in the discovery of a host of new and remarkable forms of these insects. During his return home from Australia early in 1887, the writer of this notice had the good fortune to take passage with him from Gibraltar to England; and he recalls with gratitude the interest and pleasure experienced at the sight of the extensive and beautiful collections of Lepidoptera made at the Antipodes by Meyrick, who with great kindness and no small amount of trouble, favoured his fellow Entomologist with a view of them during the voyage.

On his return to England, Meyrick rejoined his old public school at Marlborough as assistant-master, retiring in 1914, but continuing to reside in the immediate neighbourhood until his decease. It is not possible here to do more than to allude to the great succession of memoirs on his special group of insects, which during this long period continued to appear in nearly all the principal entomological publications abroad as well as at home. His beautiful and eminently legible manuscript was well known and highly appreciated by those through whose hands these papers passed in the course of publication.

It is estimated that at least 20,000 new species, besides very many new genera and several new families of Lepidoptera, were described by him during his sixty years of active work. As regards our own fauna, he is best known by the *Handbook of the British Lepidoptera* which appeared towards the end of 1895. As the only work dealing with our Lepidopterous insects as a whole since the publication of *Stainton's Manual* some forty years previously, the Handbook fulfilled an obvious need, and in that respect was well received by our workers in general; but the radical, not so say daring changes in classification and nomenclature therein embodied, were by no means appreciated, and gave rise to a great deal of adverse criticism at the time, to which Meyrick replied three years later in a paper in the *Zoologist* on 'Moths and their Classification.' A 'Revised Handbook,' in many respects extended and improved, was published in 1928, and at present is in general use.

Meyrick joined the Entomological Society of London as long ago as 1880, and at the time of his decease was the second Fellow in point of seniority. He became a Fellow of the Zoological Society in 1889, and in 1904 the value and importance of his work were recognised by his election to the Fellowship of the Royal Society. His work in Australia and New Zealand was also recognised by Honorary Fellowships of several scientific societies of these countries.

To his widow, who with two daughters survives him, we offer our very sincere sympathy.—J.J.W.

Society.

ENTOMOLOGICAL CLUB.—The Verrall Supper Meeting took place at the Holborn Restaurant on January 18th, 1938. The meeting was called for 6.30 p.m., and the usual large attendance thoroughly enjoyed the conversazione which was held in a special room before the supper.

Supper was served at 7.30, Mr. H. Willoughby Ellis in the Chair. Grace was said by the Bishop of St. Edmundsbury and Ipswich, and after the toast of the King and the silent toast to the memory of the Founder (Mr. Verrall), the Chairman announced that 185 acceptances had been received, which was hoped to be a record but several could not attend through illness. He also reminded the gathering of the forthcoming Entomological Congress to be held at Berlin on the 20th August, 1938. Invitations were available for any who wished to attend, and he hoped that this country would be well represented.

Mr. Collin, the Verrall Supper Member of the Entomological Club, who is always responsible for the arrangements, is to be congratulated on another very successful gathering. The party broke up at a late hour.—H. WILLOUGHBY ELLIS, *Hon. Secretary*.

CHECK LIST OF THE COLLEMBOLA OF OCEANIA

BY EDWARD HANDSCHIN, PH.D.

Professor, University of Basel, Switzerland.

Very little is known of the Collembola of Oceania. Schäffer (1898) investigated Dahl's material from New Britain, Carpenter (1904-34) the fauna of Hawaii, Samoa, the Marquesas and Society Islands, Schött (1920) the Collembola of Juan Fernandez and Easter Island, Womersley (1928 and 1937) those of New Britain

and the New Hebrides, and Folsom (1932) worked on further material from Hawaii. There are occasional records from Fiji (Börner), New Caledonia (Handschin), the Galapagos Islands (Folsom) and the Tuamotus (Denis).

In the species recorded from the Pacific some are of wide distribution. Whether they have been introduced by man to the different stations, it is difficult to say. A number of European forms have, however, been listed from Chile by Nicolet (1841). Nearly all the collecting grounds are widely separated, and none of the records gives us a complete picture of the full composition of the fauna. For the moment, most of the forms from different parts of Oceania may be regarded as endemic, but they may turn up elsewhere.

We can but regret that this important and interesting group has so far been rather neglected as regards zoogeography. A check list may be very useful to students of the group, and it is to be hoped that in the future the interest of collectors and entomologists will be drawn to the small order of Collembola.

In the following list, the numbers in brackets refer to the bibliography.

Suborder ARTHROPLEONA Börner.

Family PODURIDAE Lubbock.

Subfamily HYPOGASTRURINAE Börner.

Genus *Hypogastrura* Bourlet 1839.

Hypogastrura armata (Nicolet) 1841.

Schött (10) 1920, p. 34. Juan Fernandez: Masatierra. (Cosmopolitan.)

Hypogastrura manubrialis (Tullberg) 1876.

Schött (10) 1920, p. 34. Juan Fernandez: Masatierra. (Palearctic and Nearctic Regions, South America.)

Hypogastrura longispina (Tullberg) 1876.

Handschin (6) 1926, p. 235. New Caledonia: Ngoy Valley. (Palearctic Region, Argentina.)

Genus *Schöttella* Schäffer 1896.

Schöttella alba Folsom 1932.

Folsom (5) 1932, p. 54, figs. 1-4. Hawaiian Islands: Oahu: Honolulu.

? *Schöttella clavigera* Schäffer 1898.

Schäffer (9) 1898, p. 400, figs. 42-46. Bismarck Archipelago: New Britain: Ralum.

Stach (12) 1929, p. 363.

Genus *Xenylla* Tullberg 1869.*Xenylla sensilis* Folsom 1932.

Folsom (5) 1932, p. 54, figs. 5-13. Hawaiian Islands: Oahu : Honolulu.

Xenylla alba Folsom 1932.

Folsom (5) 1932, p. 54, figs. 14-20. Hawaiian Islands: Oahu : Honolulu.

Xenylla octo-oculata Carpenter 1927.

Carpenter (2A) 1927, p. 112, figs. 26-32. Samoa: Upolu : Apia.

Subfamily ACHORUTINAE Börner.

Tribe Pseudachorutini Börner.

Genus *Pseudachorutes* Tullberg 1871.*Pseudachorutes dahlü* (Schäffer) 1898.

Schöttella dahlü Schäffer (9) 1898, p. 400, figs. 1-3, 40, 41.

Stach (12) 1929, p. 363.

Womersley (13), 1937, p. 205. Bismarck Archipelago: New Britain : Ralum, Kabakaul. (New Guinea.)

Genus *Anurida* Laboulbène 1865.*Anurida maritima* Laboulbène 1865.

Stach (12A) 1932, p. 332. Galapagos Islands: St. Maria.

Genus *Stachia* Folsom 1932.*Stachia minuta* Folsom 1932.

Folsom (5), 1932, p. 55, figs. 21-30. Hawaiian Islands: Oahu : Honolulu, Tantalus.

Tribe Achorutini Börner.

Genus *Protanura* Börner 1906.*Protanura capitata* Folsom 1932.

Folsom (5) 1932, p. 56, figs. 31-36. Hawaiian Islands: Oahu : Honolulu.

Genus *Meganurida* Carpenter 1934.*Meganurida mumfordi* Carpenter 1934.

Carpenter (2C) 1934, p. 365, fig. 1. Marquesas: Uapou : Kohepu.

Genus *Echianura* Carpenter 1934.*Echianura elegans* Carpenter 1934.

Carpenter (2C) 1934, p. 367, fig. 2. Marquesas: Hivaoa : Matauuna.

Genus *Sericanura* Carpenter 1934.*Sericanura pacifica* Carpenter 1934.

Carpenter (2C) 1934, p. 368, fig. 3. Marquesas: Hivaoa : Matauuna.

Genus *Achorutes* Templeton 1834.*Achorutes citronella* (Carpenter) 1904.Neanura *citronella* Carpenter (2), 1904, p. 303, figs. 20-27.

,, ,, Folsom (5), 1932, p. 56. Hawaiian Islands:

Oahu: Waianae, Honolulu: Maui: Haleakala.

Achorutes fortis (Oudemans) 1890.Anura *fortis* Oudemans (7) 1890, p. 91.Neanura *fortis* Schäffer (9) 1898, p. 399. Bismarck Archipelago: New Britain: Ralum. (Sunda Islands.)*Achorutes hirtellus* Börner 1906.Neanura *hirtella* Carpenter (2c) 1934, p. 369. Marquesas: Uahuka: Patatauaa.Neanura *hirtella* Carpenter (2b) 1934, p. 135. Society Islands: Moorea. (Java.)*Achorutes insularum* Carpenter 1934.Neanura *insularum* Carpenter (2c) 1934, p. 369, fig. 4. Marquesas Islands: Eiao, Uahuka, Hivaoa, Mohotani.*Achorutes rosaceus* Schött 1917.

Womersley (14) 1937, p. 205. New Hebrides: Malekula. (Australia.)

Subfamily ONYCHIURINAE Börner.

Genus *Onychiurus* Gervais 1841.*Onychiurus fimetarius* (Linné, Lubbock) 1758, 1873

Folsom (5) 1932, p. 57. Hawaiian Islands: Hawaii: Olaa.

Carpenter (2A) 1927, p. 114. Samoa: Upolu: Apia. (Northern Hemisphere, Algeria, Sumatra, China.)

Genus *Tullbergia* Lubbock 1876.*Tullbergia silvicola* Folsom 1932.

Folsom (5) 1932, p. 57, figs. 37-41. Hawaiian Islands: Oahu: Tantalus.

Family ENTOMOBRYIDAE Tömösvary.

Subfamily ISOTOMINAE.

Genus *Folsomides* Stach 1922.*Folsomides exiguus* Folsom 1932.

Folsom (5) 1932, p. 58, figs. 42-47. Hawaiian Islands: Oahu: Honolulu, Tantalus.

Genus *Isotomodes* Axelson 1907.*Isotomodes denisi* Folsom 1932.

Folsom (5) 1932, p. 59, figs. 48-56. Hawaiian Islands: Oahu: Honolulu, Tantalus.

Genus *Folsomia* Willem 1902.*Folsomia fimetaria* (Linné, Tullberg) 1758, 1871.

Folsom (5) 1932, p. 60. Hawaiian Islands : Hawaii : Honokaa, Olaa.

Carpenter (2B) 1934, p. 136. Society Islands: Tahiti. (Palearctic and Nearctic Regions.)

? *Folsomia fimetarioides* Axelson 1903.

Carpenter (2B) 1934, p. 136. Society Islands: Tahiti. (Northern Europe.)

Genus *Denisia* Folsom 1932.

Denisia falcata Folsom 1932.

Folsom (5) 1932, p. 61, figs. 58-62. Hawaiian Islands: Oahu : Honolulu.

Genus *Proisotoma* Börner 1906.

Proisotoma nigromaculosa Folsom 1932.

Folsom (5) 1932, p. 62, figs. 63-66. Hawaiian Islands : Oahu : Honolulu, Pupukea.

Proisotoma obtusicauda (Schäffer) 1897.

Isotoma obtusicauda Schäffer (8) 1897, p. 19, figs. 42-45.

Proisotoma obtusicauda Schött (10) 1920, p. 35. Juan Fernandez: Masatierra. (Valdivia.)

Genus *Isotoma* Bourlet 1839.

Isotoma perkinsi Carpenter 1904.

Carpenter (2) 1904, p. 302, figs. 17-19. Hawaiian Islands : Kauai : Koholuamano.

Folsom (5) 1932, p. 63.

Isotoma minor Schäffer 1896.

Folsom (5) 1932, p. 63, figs. 67-71. Hawaiian Islands : Oahu : Honolulu.

Carpenter (2C) 1934, p. 371. Marquesas: Nukuhiva : Teuanui, Toovii. (Northern and Middle Europe.)

Isotoma masatierrae Schött 1920.

Schött (10) 1920, p. 35, figs. 1-4. Juan Fernandez : Masatierra.

Isotoma inaequalis Schäffer 1898.

Schäffer (9) 1898, p. 403, figs. 4, 5. Bismarck Archipelago : New Britain : Ralum, Gunantambo.

Isotoma alticola Carpenter 1934.

Carpenter (2B) 1934, p. 136, fig. 1. Society Islands: Tahiti.

Subfamily ENTOMOBRYINAE Schäffer.

Tribe Isotomurini Börner.

Genus *Isotomurus* Börner 1903.

Isotomurus palustris (Müller) 1776.

Denis (3) 1925, p. 285. Tuamotus: Mangareva. (Cosmopolitan.)

Isotomurus palustris (Müller) ab. *balteata* (Reuter) 1876.

Schäffer (9) 1898, p. 402. Bismarck Archipelago: New Britain: Gunantambo.

Folsom (5) 1932, p. 63. Hawaiian Islands: Oahu: Honolulu; Kauai.

Carpenter (2c) 1934, p. 371. Marquesas: Nukuhiva: Teuanui, Honolulu; Maui.

Isotomurus palustris (Müller) ab. *fucicola* (Reuter) 1891.

Schäffer (9) 1898, p. 402. Bismarck Archipelago: New Britain: Gunantambo.

Tribe Entomobryini Börner.

Genus *Entomobrya* Rondani 1861.

Entomobrya marginata (Tullberg) 1871.

Schäffer (9) 1898, p. 405. Bismarck Archipelago: New Britain: Ralum. (Europe, North America.)

Entomobrya marginata (Tullberg) ab. *pallida* Krausbauer 1902.

Schäffer (9) 1898, p. 405. Bismarck Archipelago: New Britain: Ralum. (Europe.)

Entomobrya insularis Carpenter 1904.

Carpenter (2) 1904, p. 301, figs. 7-11. Hawaiian Islands: Hawaii: Mauna Loa, Kona.

Folsom (5) 1932, p. 64.

Entomobrya kalakaua Carpenter 1904.

Carpenter (2) 1904, p. 301, figs. 12-16. Hawaiian Islands: Kauai: Koholuamano.

Folsom (5) 1932, p. 64.

Entomobrya decora (Nicolet) 1841.

Schött (10) 1920, p. 36, figs. 5-6. Juan Fernandez: Masatierra.

Entomobrya multifasciata (Tullberg) 1871.

Schött (10) 1920, p. 35. Juan Fernandez: Masafuera, Easter Island. (Europe, Morocco, North America.)

Entomobrya multifasciata (Tullberg) ab. *imminuta* Folsom 1932.

= *Entomobrya imminuta* Carpenter 1934.

Folsom (5) 1932, p. 64, figs. 72-75. Hawaiian Islands: Oahu: Honolulu.

Carpenter (2c) 1934, p. 372. Marquesas: Hivaoa: Mounafefe.

Entomobrya lactea Folsom 1932.

Folsom (5) 1932, p. 65, figs. 76-78. Hawaiian Islands: Oahu: Tantalus.

Carpenter (2c) 1934, p. 371. Marquesas: Hivaoa.

Carpenter (2b) 1934, p. 137. Society Islands: Tahiti, Moorea.

Entomobrya varia Schött 1917.

Womersley (14) 1937, p. 205. Bismarck Archipelago: New Britain: Rabaul. (Australia.)

Genus *Sinella* Brook 1882.*Sinella coeca* Schött 1896.

= *Sinella höfti* Schäffer 1896.

Folsom (5) 1932, p. 66, figs. 79-81. Hawaiian Islands: Oahu: Tantalus.

Carpenter (2c) 1934, p. 372. Marquesas: Uahuka, Nukuhiva, Hivaoa, Mohotani. (Europe, India, Java, China, North America.)

Carpenter (2B) 1934, p. 137. Society Islands: Tahiti, Moorea.

Genus *Parasinella* Carpenter 1934.*Parasinella adamsoni* Carpenter 1934.

Carpenter (2B) 1934, p. 138, fig. 2. Society Islands: Tahiti.

Genus *Sira* Lubbock 1869.*Sira intermedia* Schött 1920.

Schött (10) 1920, p. 37, fig. 7. Juan Fernandez: Masatierra, Masafuera.

Sira jacobsoni Börner 1903.

Folsom (5) 1932, p. 66, figs. 82-88. Hawaiian Islands: Oahu: Honolulu, Wahiawa. (India, Sunda Islands, New Guinea.)

Genus *Pseudosira* Schött 1893.*Pseudosira fuscipicta* (Schäffer) 1898.

Sira fuscipicta Schäffer (9) 1898, p. 412, figs. 19-22. Bismarck Archipelago: New Britain: Ralum.

Pseudosira flavescens Womersley 1928.

Womersley (13) 1928, p. 57, figs. 12-14. New Hebrides: Espiritu Santo: Elephant Islet.

Genus *Mesira* Schtscherbakow 1898.*Mesira picta* (Schäffer) 1898.

Lepidocyrtus pictus Schäffer (9) 1898, p. 415, figs. 15-18. Bismarck Archipelago: New Britain: Ralum, Mioko. (New Guinea.)

Genus *Lepidocyrtus* Bourlet 1839.*Lepidocyrtus falcifer* Schäffer 1898.

Schäffer (9) 1898, p. 416, figs. 27-29. Bismarck Archipelago: New Britain: Ralum.

Lepidocyrtus parvidentatus Schäffer 1898.

Schäffer (9) 1898, p. 417, figs. 27-29. Bismarck Archipelago: New Britain: Ralum. (New Guinea.)

Lepidocyrtus ralumensis Schäffer 1898.

Schäffer (9) 1898, p. 418, figs. 30-32. Bismarck Archipelago :
New Britain : Ralum.

Lepidocyrtus cyaneus Tullberg 1871.

Folsom (5) 1932, p. 68, figs. 89-91. Hawaiian Islands : Oahu :
Pupukea. (Cosmopolitan.)

Lepidocyrtus cyaneus Tullberg ab. *assimilis* Reuter 1890.

Schäffer (9) 1898, p. 418. Bismarck Archipelago : New Britain :
Ralum.

Lepidocyrtus dahlui Schäffer 1898.

Schäffer (9) 1898, p. 418, figs. 33, 34, 38. Bismarck Archi-
pelago : New Britain : Ralum.

Lepidocyrtus medius Schäffer 1898.

Schäffer (9) 1898, p. 420, figs. 35-37. Bismarck Archipelago :
New Britain : Ralum.

Carpenter (2B) 1934, p. 138. Society Islands : Tahiti, Moorea.

Carpenter (2C) 1927, p. 114. Samoa : Upolu : Aleipata.

Lepidocyrtus cinctus Schäffer 1898.

Schäffer (9) 1898, p. 421, fig. 39. Bismarck Archipelago : New
Britain : Ralum, Kabakaul.

Lepidocyrtus heterophthalmus Carpenter 1904.

Carpenter (2) 1904, p. 300, figs. 1-6. Hawaiian Islands : Hawaii :
Kona.

Folsom (5) 1932, p. 68.

Lepidocyrtus intermixtus Folsom 1924.

Folsom (4) 1924, p. 75, figs. 27-29. Galapagos Islands : South
Seymour Island.

Stach (12A) 1932, p. 332. Galapagos Islands : South Seymour
Island.

Lepidocyrtus pseudopictus Womersley 1928.

Womersley (13) 1928, p. 58, figs. 6-9. New Hebrides : Espiritu
Santo : Hog Harbour.

Lepidocyrtus medioides Womersley 1928.

Womersley (13) 1928, p. 59, figs. 10, 11. New Hebrides :
Espiritu Santo : Hog Harbour.

Lepidocyrtus inornatus Folsom 1932.

Folsom (5) 1932, p. 68, figs. 92, 93. Hawaiian Islands : Oahu :
Honolulu.

Carpenter (2C) 1934, p. 373. Marquesas Islands : Hivaoa,
Nukuhiva.

Lepidocyrtus immaculatus Folsom 1932.

Folsom (5) 1932, p. 68, figs. 94-96. Hawaiian Islands : Oahu :
Honolulu ; Maui.

Lepidocyrtus faaroanus Carpenter 1934.

Carpenter (2B) 1934, p. 139, fig. 3. Society Islands : Moorea.

Lepidocyrtus plumosus Carpenter 1934.

Carpenter (2C) 1934, p. 373, fig. 5. Marquesas Islands: Hivaoa.

Genus *Drepanocyrtus* Handschin 1924.

Drepanocyrtus terrestris Folsom 1932.

Folsom (5) 1932, p. 69, figs. 97-104. Hawaiian Islands: Oahu:
Honolulu, Pupukea, Wahiawa.

Genus *Lepidocyrtinus* Börner 1903.

Lepidocyrtinus armatus Carpenter 1934.

Carpenter (2C) 1934, p. 347, fig. 6. Marquesas Islands : Nukuhiva, Hivaoa, Uapou, Eiao.

Tribe Paronellini Börner.

Genus *Salina* McGillivray 1894.

= *Cremastocephalus* Schött 1896.

Salina maculata Folsom 1932.

Folsom (5) 1932, p. 71, figs. 105-110. Hawaiian Islands: Oahu:
Kauai, Hawaii: Kona.

Carpenter (2B) 1934, p. 140, fig. 3. Society Islands: Tahiti.

Salina celebensis (Schäffer) 1898.

Carpenter (2A) 1927, p. 115. Samoa : Upolu : Malololelei.
(Seychelles, Ceylon, Japan, Sunda Islands, N. Australia,
New Guinea.)

Salina insignis Handschin 1928.

Womersley (14) 1937, pp. 206-207, fig. 1. Bismarck Archipelago: New Britain : Rabaul. (Java.)

Genus *Chaetoceras* Handschin 1926.

Chaetoceras sarasini Handschin 1926.

Handschin (6) 1926, p. 238, figs. 11-14. New Caledonia: Ngoy Valley.

Genus *Paronella* Schött 1893.

Paronella dahliei Schäffer 1898.

Schäffer (9) 1898, p. 409, figs. 9-14, 47. Bismarck Archipelago:
New Britain : Ralum. (New Guinea.)

Schött (11) 1903, p. 12, figs. 27, 28.

Paronella picta Schäffer 1898.

Schäffer (9) 1898, p. 410, figs. 48-52. Bismarck Archipelago :
New Britain : Ralum.

Schött (11) 1903, p. 12, fig. 29.

Tribe Cyphoderini Börner.

Genus *Cyphoderus* Nicolet 1841.

Cyphoderus assimilis Folsom 1932.

Folsom (5) 1932, p. 71, figs. 111, 112. Hawaiian Islands :
Oahu : Honolulu.

Suborder SYMPHYPLEONA Börner.

Family SMINTHURIDAE Lubbock.

Subfamily SMINTHURIDINAE Börner.

Genus *Sminthurides* Börner 1901.

Sminthurides ramosus Folsom 1932.

Folsom (5) 1932, p. 72, figs. 113-126. Hawaiian Islands :
Oahu : Honolulu.

Sminthurides seurati Denis 1925.

Denis (3) 1925, p. 273, figs. 115-123. Tuamotus : Mangareva.

Subfamily SMINTHURINAE Börner.

Genus *Bourletiella* Banks 1899.

Bourletiella insula Folsom 1932.

Folsom (5) 1932, p. 73, figs. 127-132. Hawaiian Islands: Oahu:
Honolulu.

Genus *Deuterosminthurus* (Börner) Linnaniemi (1903) 1912.

Deuterosminthurus friedlaenderi Börner 1903.

Börner (1) 1903, p. 164. Tonga : Niuafouu.

Genus *Sminthurus* Latreille 1804.

? *Sminthurus vexillarius* Schäffer 1898.

Schäffer (9) 1898, p. 422, figs. 53-56. Bismarck Archipelago :
New Britain : Ralum.

? *Sminthurus gracilicornis* Schäffer 1898.

Schäffer (9) 1898, p. 423. Bismarck Archipelago: New Britain:
Ralum.

Subfamily DICYRTOMINAE Börner.

Genus *Ptenothrix* Börner 1909.

Ptenothrix dubia Folsom 1932.

Folsom (5) 1932, p. 74, figs. 133-136. Hawaiian Islands: Oahu:
Tantalus.

Genus *Dicyrtoma* Bourlet 1843.

Dicyrtoma insularis Carpenter 1934.

Carpenter (2c) 1934, p. 376, fig. 7. Marquesas Islands: Nuku-
hiva.

Genus *Dicyrtomina* Börner 1906.

Dicyrtomina catenata Schött 1920.

Schött (10) 1920, p. 38, figs. 8-10. Juan Fernandez : Masa-
tierra.

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Pacific Entomological Survey.

January, 1938.

THE PARASITES OF BRITISH BIRDS AND MAMMALS. XX. THE ECTOPARASITES OF THE HOUSE-MARTIN, SWIFT, SWALLOW AND SAND-MARTIN.

BY GORDON B. THOMPSON.

In the past considerable confusion has existed in this country concerning the ectoparasites of the following four birds: *Hirundo r. rustica* L. (Swallow), *Delichon u. urbica* (L.) (House-Martin), *Riparia r. riparia* (L.) (Sand-Martin) and *Micropus a. apus* (L.) (Swift). With a view to settling the question, I am presenting below an analytical table of the various ectoparasites which have been recorded from these four birds, together with some notes.

NAME OF BIRD.	ECTOPARASITES.			
	<i>Mallophaga</i> or biting-lice.	<i>Siphonaptera</i> or Fleas.	<i>Acarina, Ixodoidea</i> , etc. Ticks, mites, etc.	<i>Cimicidae</i> or Bugs.
HIRUNDO R. RUSTICA L. (Swallow).	<i>Myrsidea rustica</i> (Nitzsch).	<i>Ceratophyllus gallinae</i> Schränk.	<i>Dermanyssus gallinae</i> (Redi).	<i>Diptera-Hippoboscidae</i> or bird-flies.
	<i>Hirundoecus malleus</i> (Nitzsch).			—
	<i>Philopterus excisus</i> (Nitzsch).			
	<i>Degeeriella gracilis</i> (Nitzsch).			
DELICHON U. URBICA (L.) (House-Martin).	<i>Philopterus excisus</i> (Nitzsch).	<i>Ceratophyllus farrevi</i> Roths.	<i>Dermanyssus gallinae</i> (Redi).	<i>Stenopteryx hirundinis</i> (Linn.).
	<i>Philopterus quinque- maculatus</i> (Piaget).	<i>C. hirundinis</i> Curtis.		
	<i>Degeeriella gracilis</i> (Nitzsch).	<i>C. rusticus</i> Wagner.		
		<i>C. waterstoni</i> Jordan.		
RIPARIA R. RIPARIA (L.) (Sand-Martin).	<i>Myrsidea rustica</i> (Nitzsch).	<i>Ceratophyllus styx</i> Roths.	<i>Ixodes canisuga</i> Johnston.	—
	<i>Degeeriella tenuis</i> (Nitzsch).			
MICROPUS A. APUS (L.) (Swift).	<i>Menopon parvulum</i> Piaget.	<i>Ceratophyllus gallinae</i> Schränk.	—	<i>Crataerina pallida</i> (Latr.).
	<i>Demmyus truncatus</i> (Olfers).			
	<i>Eureum cimicoides</i> Nitzsch.			

MALLOPHAGA.

Of the nine species of biting-lice which have been recorded from these four birds only four are in my experience frequently found. *Philopterus excisus* (Nitzsch) and *Degeeriella gracilis* (Nitzsch) seem to be the commonest. The former is a short, active little species, whereas the latter is an elongate, slender and less active species. *Myrsidea rustica* (Nitzsch) is also rather an active species, being small and somewhat rectangular, as contrasted with the roundness of *P. excisus* (Nitzsch). It is interesting to note that *M. rustica* (Nitzsch) has been recorded from both the Swallow and the Sand-Martin, and *D. gracilis* (Nitzsch) and *P. excisus* (Nitzsch) both occur on the Swallow and the House-Martin. Since these three species of birds are relatively close to one another in the present classification of the birds, it lends support to the phylogeny of the hosts. The species of the genera *Eureum* and *Hirundoecus* are extremely interesting lice, being comparatively large, golden brown and rather bug-like in appearance—hence the name *cimicoides*. Specimens of these parasites are extremely rare and seem to occur either singly or as two or three at the most on any one bird. I do not think it would be an exaggeration to say that the number of known specimens of these species represented in collections would not amount to very many. I have never seen the males. *Dennyus truncatus* (Olfers) is a specific parasite of the Swift in this country. All the species of the genus *Dennyus* known to date are parasitic on Swifts and their very near allies. This fairly large species is dark brown in colour and seems to occur in small numbers on most specimens of its host. The remainder of the species of lice not mentioned here are at present unknown to me from actual specimens.

SIPHONAPTERA.

In my own experience, and taking into consideration published accounts of the fleas occurring in the nests of these four birds, the Swallow and Swift are almost free. Occasionally an odd specimen or two of the common Ceratophyllid, *C. gallinae* Schrank, may be bred from their nests. The House-Martin and the Sand-Martin, on the other hand, are definitely parasitised by fleas. The Sand-Martin possesses a flea specific to itself, and the species (*C. styx* Roths.) may be found in large numbers in their burrows or even swarming at the mouth of the burrows. Four species of fleas have been recorded from House-Martins' nests and are specific to this host. The two commonest species are *C. hirundinis* Curtis and *C.*

rusticus Wagner. *C. farreni* Roths. has been recorded on a few occasions, whereas *C. waterstoni* (Jord.) is rare and known only from Scotland. It is quite normal to find at least two species of fleas in a House-Martin's nest, and occasionally a third occurs. The structure of the House-Martin's nest is such that it affords an excellent medium for fleas to breed in. It is quite evident that a large percentage of fleas occurring in the nests of the House-Martin and the Sand-Martin overwinter in the pupal state and emerge the following spring when the birds return to their old nesting sites.

ACARINA.

In listing these I have not included the numerous species of mites which are known to live on the birds themselves. *Dermanyssus gallinae* (Redi), the red mite of poultry, is invariably present in very considerable numbers in Swallows' nests. It occurs occasionally in House-Martins' nests but only in small numbers. I am not aware as to whether it occurs in the nests of the other two birds. *Dermanyssus gallinae* (Redi) feeds exclusively on the blood of its host. With regard to the Ixodoidea, or ticks, I do not think they have been recorded from the nests or the hosts under consideration except in the case of the Sand-Martin. *Ixodes canisuga* Johnston has been recorded on numerous occasions from Sand-Martins' nests.

CIMICIDAE.

The House-Martin is the only species parasitised under normal conditions by anything in the nature of a 'bed-bug.' The species known as *Oeciacus hirundinis* (Jenyns) lives in the nest of the House-Martin and should not be confused in any way with the common bed-bug *Cimex lectularius* Linn. from which it differs in being very much more hairy and smaller. Unfortunately, to the untrained eye these two bugs might conceivably be regarded as one and the same species, with the result that House-Martins' nests are frequently ruthlessly destroyed as suspicious depôts of the bed-bug. The House-Martin's bug will feed on man but under ordinary circumstances remains in the nest of its true host, in which it frequently occurs in very large numbers. *O. hirundinis* (Jenyns) has been recorded from the Swallow on very rare occasions, but these records are to be regarded with suspicion. It is extremely probable that the recorder and/or the person who found

the bug did not know the species of bird he was dealing with, as it will be agreed upon that the four species of birds under discussion might easily be misidentified.

HIPPOBOSCIDAE.

In the British Isles and under normal circumstances the House-Martin and the Swift are the only two species parasitised by this group of dipterous parasites. Each has a bird-fly specific to it. As a result of the specialised specificity of these two species, their wings have become reduced to such an extent as to be quite useless for flying. The two species, namely *Stenepteryx hirundinis* (Linn.) and *Crataerina pallida* (Latr.), parasitise the House-Martin and the Swift respectively and are perhaps better known than any of the other species of Hippoboscidae occurring in our islands. It seems that *C. pallida* (Latr.) is frequently carried by the birds when in flight, whereas *S. hirundinis* (Linn.) does not occur commonly on its host. They both spend the greater part of their lives in the nests of their hosts sucking blood at intervals. These flies deposit puparia, which may be found in the nests. Considering that neither species has been recorded, as far as I am aware, from the part of the world from which their hosts migrate to this country, it would appear that they are not carried successfully by their hosts on migration. Actually the greater number of them overwinter in the pupal state and emerge the following spring, *i.e.* about the time the birds return to this country.

It is interesting to note in regard to the Hippoboscidae that on the Continent the Swallow has a species, *Ornithomyia biloba* Dufour, as a specific parasite. This is a fully winged species rather like *Ornithomyia avicularia* Linn. It seems extraordinary that this parasite has never been found in the British Isles.

In conclusion, I should like to point out that of the parasites listed all save the Mallophaga, which feed on epidermal debris, etc., are blood-suckers and occur for the most part in the nests. The young of the House-Martin, Sand-Martin and Swift must therefore have a very bad time of it.

For further information regarding the parasites living in the nests of House-Martins, see my paper No. III of this series (Ent. mon. Mag., 1935, LXXI, pp. 46-50.

SOME LYMANTRIIDAE FROM ABYSSINIA.

BY C. L. COLLENETTE, F.R.E.S.

Three collections of Lepidoptera recently made in Abyssinia by Messrs. R. E. Ellison, T. Wikeley and G. Hartman contain a number of Lymantriidae, which have been submitted to me for determination. In addition to two new species, several others are included which have not previously been recorded from Abyssinia, and I have therefore detailed all the insects taken.

Localities mentioned in the text have the following elevations:—Harar, 6,300 ft.; Dire Dawa, 5,000 ft.; Minneh, Arussi, Central Abyssinia, c. 5,000 ft.

Mr. Ellison and Mr. Wikeley have most kindly presented a number of specimens for inclusion in the British Museum collection, in addition to the two holotypes.

Leucoma monosticta Butler, 1898. 1 ♂, Harar, 11th February 1937, T.W.

Stracilla translucida Oberthür, 1880. 17 ♀♀, Harar, July-September 1937 and April 1938, R.E.E.; 1 ♂, 3 ♀♀, Harar, February and April 1937, T.W.; 3 ♂♂, 1 ♀, Addis Ababa, December 1937, T.W.

Crorema collenettei Hering, 1932. 2 ♂♂, 1 ♀, Harar, September 1937, R.E.E.; 2 ♂♂, Harar, October 1936 and April 1937, T.W.

Euproctis dewitzi Grünberg, 1907. 3 ♂♂, 3 ♀♀, Harar, July-October 1937 and January 1938, R.E.E.; 1 ♀, Harar, March 1937, T.W.

Euproctis pygmaea Walker, 1855. 1 ♂, Dire Dawa, 28th September 1937, R.E.E.

Laciþa gemmata Distant, 1897. 1 ♀, Harar, 6th July 1937, R.E.E.; 1 ♀, Harar, 18th March 1937, T.W.

Aroa discalis Walker, 1855. 1 ♂, Minneh, 21st February 1938, G.H.

Aroa quadriplagata Pagenstecher, 1903. 1 ♂, Dire Dawa, 27th July 1937, R.E.E.

Bracharoa ragazzii Berio, 1936. 21 ♂♂, Harar, July-September 1937, January-April 1938, R.E.E.; 5 ♂♂, Harar, November-December 1936, March 1937, T.W.; 2 ♂♂, Minneh, February 1938, G.H.

Laelia diaschia Hampson, 1905. 9 ♀♀, Harar, July 1937, R.E.E.; 2 ♀♀, Harar, March-April 1937, T.W.

Laelia impura Hering, 1926. 1 ♂, Dire Dawa, November 1937, 1 ♂, 1 ♀, Harar, August 1937 and February 1938, R.E.E.; 3 ♂♂, 5 ♀♀, Harar, November 1936, February-March 1937, T.W.

Dasychira extorta Distant, 1897. 1 ♀, Harar, 6th March 1937, T.W.

***Dasychira plesia* sp. nov.**

♀. Resembles *Dasychira phenax* Collenette, 1932 (Natal), but differs in small details in the pattern of the forewing. In *D. phenax* the postmedial fascia is slightly and regularly curved, with convexity terminad, from the costa to vein *Cu*₁; in the present species the fascia does not reach the costa, while from vein *R*₃ to *Cu*₁ it is almost straight, but indented inwardly at vein *M*₂. The preterminal fascia of *D. phenax*, which is crenate, with points on the veins and concavities terminad, does not touch the termen, while in *D. plesia* the points on nearly all the veins are produced to touch the termen.

Expanse: ♀♀, 38—41 mm.

1 ♀ (holotype) and 1 ♀ (paratype), Harar, 18th March 1937 and 14th December 1936, T.W. Also, in the British Museum collection, 1 ♀, Awash, Abyssinia, 12th July 1926; 2 ♀♀, Kurmuk, Fung Province, S.E. Sudan, 25th November and 27th December 1929, A. W. M. Disney; 1 ♀, Tembura, S. Sudan, December 1922.

Lymantria modesta Walker, 1855. 1 ♂, Harar, 7th March 1938, R.E.E.; 1 ♂, 15th March 1937, T.W.

***Polymona rufifemur ellisoni* subsp. nov.**

♀. The upper side of the forewing in *P. r. rufifemur* is a uniform sepia, while in *P. r. ellisoni* the ground colour is wood brown, with broad ante-medial and postmedial fasciae of fuscous. In the new subspecies the antennal shaft is fuscous mottled with wood brown, the legs fuscous banded with wood brown.

Expanse: ♀♀, 45—49 mm.

1 ♀ (holotype), 13 ♀♀ (paratypes), Harar, July, October and December 1937, February-April 1938, R.E.E.; 4 ♀♀ (paratypes), Harar, November 1936, February-March 1937, T.W.

The series as above is very uniform, but a single ♀ from Addis Alem, 3rd November 1937, T.W., has a darker forewing, with the fasciae still plainly visible.

107 Church Road, Richmond, Surrey.

June 8th, 1938.

An aberration of Bembidion properans Steph.—On March 8th of this year I took at a haystack near my house a single specimen of an aberration of *Bembidion properans* Steph. with bronze thorax and elytra blue, except the basal third of the first interstices, which is brassy. Reitter's 'a. *coeruleotinctum*' has the entire upper surface blue. I name this new aberration 'a. *coeruleipenne*.' —C. J. SAUNDERS, Barcombe Mills, Sussex: May 30th, 1938.

LAPHRIA GILVA L. IN WINDSOR FOREST: A DIPTERON
NEW TO BRITAIN.

BY K. G. BLAIR, D.SC., F.R.E.S.

I have pleasure in recording the capture of this fine Asilid in Windsor Forest. The occasion was the Field Meeting of the South London Entomological and Natural History Society at Ascot on June 12th, and the capture was made by my wife, who boxed the insect at rest on a pine trunk.

This is in effect an addition to our list of British Diptera; though the species figures in Verrall's list of Reputed British Species, yet no definite record or authentic British specimen appears to be known. That it should occur in Windsor Forest adds yet another fine insect to the record of rare species from this classic locality. For the determination I am indebted to Mr. H. Oldroyd.

About as long as *Laphria flava* L., it is a more lightly built insect, with slender legs; black, with a soft white pubescence and slender black bristles, except on the dorsum of the second to sixth abdominal segments, where the pubescence is bright orange on a testaceous ground, decumbent, and directed backwards on the anterior part of the segment and outwards posteriorly, with a silky lustre; wings clear towards the base but blackish in the apical half; nervures black, not bordered with darker colour on the membrane. Its distribution is given as Central and Northern Europe and Northern America, but it appears to be rare.

120 Sunningfields Road, Hendon.

June 14th, 1938.

· THE TACHINIDAE OF THE MEADE COLLECTION.

BY COLBRAN J. WAINWRIGHT, F.R.E.S.

For many years during the last century Dr. R. H. Meade, of Bradford, was known as almost the only student of the Calyprate Muscidae in this country. He published several papers and in particular an 'Annotated List of British Tachinidae,' which appeared in instalments in the pages of the Entomologist's Monthly Magazine during 1891 and 1892 and a supplement to the same in 1894. There was also a 'Monograph upon the British Species of Sarcophaga,' which also appeared in the E.M.M. in parts in 1876.

On his death in 1899 his collection passed to the care of the University of Leeds, and it has long been in the present writer's mind that it was desirable that they should be examined with the idea of collating some of his results with more modern knowledge. Dr. Meade's work was done when the study of these difficult

groups had not advanced far, and it was sketchy at best, but being at the time the sole British authority upon these insects he was much consulted, and many of the records of earlier times were based upon his identifications, which it seemed desirable to check. Moreover, in his papers various new species were described, and it was certainly essential if possible that the types of those species should be seen and determined.

With these objects in view, it was arranged that a visit should be paid to Leeds at Easter, 1937. My friend Mr. W. D. Hincks very kindly obtained permission from Prof. Spaul, in whose care the collections are placed, for any specimens that it was desirable to examine at home to be removed from the cabinets and brought away, and Dr. Llewellyn Lloyd was good enough to give up some of his valuable time to assist in various ways.

The insects were contained in cabinets and were in fair condition. It was found that our author's collections, like his writings, were 'sketchy'; by no means all of the species mentioned in the papers were represented, and in but few cases were there more than two or three specimens of a species, many of them in poor condition, and probably in none was there a good representative series. The data on the labels were very slight, in many cases merely the name of the sender, without locality; and there was no attempt to indicate a type specimen for any one of the new species: in fact, as one can judge to some extent from his papers, the idea of selecting a definite type specimen evidently never occurred to him. In such circumstances it was not possible to obtain exhaustive results, but it has proved possible to clear up a number of doubtful records and to do something towards settling the identity and establishing the types of his new species. It was not thought worth while to examine specimens in cases where there was no problem to be solved, and the following notes deal only with a selected number accordingly.

Nemoraea glabrata Mg. One ♂ so named = *Ernestia Nielsenii* Villen. It was labelled 'Mr. Bloomfield Guestling 19.'

Exorista affinis Fall. There was a ♂ *E. hortulana* Mg. and two foreigners not particularly examined to represent this species. The one examined bore labels 'From *Agrotis Ashworthii* Mr. Adkin' and also 'From Mr. Billups.'

Exorista prominens Mg. Two ♂♂ so named = *Phryxe nemea* Mg. Both were labelled 'Thorparch, nr. York, 20/8/79.'

Exorista biserialis Macq. One ♀ so named = *Pelmatomyia phalaenaria* Rond. It was labelled 'Boughton, Kent, 10/6/88'; probably the one recorded Ent. Mo. Mag., 1891, p. 328.

Meigenia majuscula Rdi. One ♀ labelled 'Dulwich, 6.6.93' and 'Billups,' together with a foreigner not examined. The Dulwich specimen = *Exorista hortulana* Mg.

Masicera juvenilis Rond. Two, unlabelled specimens, not examined; two ♂♂ 'from Rev. E. N. Bloomfield' = *Lydella stabulans* Mg.

Chaetolyga separata Rond. ♂. One specimen so labelled with a query = *Megalochaeta conspersa* Mg. Labels were 'Guestling, from Rev. Mr. Bloomfield,' 'G, 91,' '2.'

Phorocera pumicata Mg. There were six specimens in all, but only four were brought away, the other two not being fully examined. The four proved to be *Zenillia roseanae* B.B., three ♂♂, one ♀. They were variously labelled: the ♀ 'Mr. Piffard, Herts.,' one ♂ 'Mr. Piffard and Bloomfield,' another 'Mr. Piffard and Bloomfield, July /93,' and one 'Mr. Douglas, bred from a Tortrix.' These are evidently the specimens upon which *pumicata* was recorded as British by Meade.

Desvoidia fusca Meade ♂. A specimen of *Brachychaeta strigata* Mg. in poor condition, gummed on to a card, with 'Freshwater, 11.4.93' on the card, and on a separate disc below 'Beaumont,' alone represented this species. This could not be the type specimen as it was described by Meade from a ♀ said to have been taken at Glanvilles Wootton by C. W. Dale (see Ent. Mo. Mag., 1894, p. 179).

As it seemed desirable to clear up the position regarding this species, the kind permission of my friend Prof. G. D. Hale Carpenter was obtained and all the specimens standing in the Dale Collection at the Oxford University Museum as *Desvoidia fusca* were sent to me for examination. There were eight in all, but seven of them proved to be *Lypha dubia* Fall., evidently placed here on superficial resemblance only. The eighth, however, was the one wanted, being obviously the actual specimen recorded by Meade when describing *fusca*, as it was a ♀ and on the back of the card was written in Dale's handwriting 'G.W., April 6th, 1892' (G.W. standing for Glanvilles Wootton). This therefore must be regarded as the type of *Desvoidia fusca* Meade, and it has now been so labelled accordingly. It is unfortunately in rather poor condition and mouldy. Meade's species had already been correctly identified with *Brachychaeta strigata* Mg. (= *spinigera* Rond.) and both the names *Desvoidia* and *fusca* sink as synonyms.

Baumhaueria albocingulata Fall. (= *gracilis* Egger), one ♂, one ♀. These are also individuals of the above species, *Brachychaeta strigata* Mg. They are labelled 'Mr. Bloomfield, Herts.' and are evidently the actual specimens which were responsible for Meade's record of *albocingulata* in Ent. Mo. Mag., 1894, p. 158, which name must be removed from our lists as there seems to be no certain British example of that species known.

Phorocera incerta Meade ♂. There were two specimens so named, but only one was brought away for confirmation. This one bore a label 'Ipswich District C.M., 26.iv.97' and '177.' It is not the specimen that should be designated as the specific type, as Meade distinctly says that it was described from a specimen taken by Rev. A. Thornley at Treswell, Notts., and presented by him to the Museum of Science and Art at Edinburgh, where presumably it still remains. That example was thus sufficiently indicated by Meade as the type, but the Ipswich specimens taken by Claude Morley can be regarded as paratypes. See Ent. Mo. Mag., 1897, pp. 223/4.

This species has already been recognised as being the same as *Blepharomyia ampicornis* Zett., to which *incerta* sinks as a synonym.

Macquartia tricincta Mg. Two ♂ flies, being very bad specimens of *Meigenia mutabilis* (Fall.) C.J.W., one without head and the other without abdomen, were named as above with a query, but there seems to have been

no mention of *tricincta* in any of Meade's publications. They bore labels 'Thorparch, York, 20/8/79.'

Acemyia acuticornis Mg. Five ♂♂ so named were all *Viviania cinerea* Fall. This also seems to have been a capture that was never recorded, and the name *Acemyia* has, we think, never appeared in any British list. They bore labels, 'Felden, Herts., 10.vii.94. A. Piffard.'

Scopolia carbonaria Panz., ♂, ♀. Two specimens brought away, one from 'Hartlebury, 27.8.96' and one 'Barmouth, 16.8.95' were, as would be expected, examples of *Wagneria nigrans* Mg. There were also three others with them just labelled 'F. Walker' only, and these were not examined.

Scopolia lugens Mg. One ♂ labelled 'Mr. Bloomfield,' also 'G.91' and '14.' This is an example of the species introduced by me as *Wagneria costata* Mg. and is only the second British specimen known to me. The one already recorded is in Mr. J. E. Collin's collection and was taken at Guestling by Mr. Bloomfield, and this new one was evidently also taken at Guestling as G.91 seems to stand for Guestling 1891.

Frontina nigricans Egger ♂. One specimen so named is *Admontia podomyia* B. & B. It is labelled 'Windermere June 1884' and is therefore with little doubt the actual specimen recorded in Ent. Mo. Mag., 1892, p. 178, which was responsible for Meade's introduction of *nigricans* into our list. That species is not known as British at present.

Plesina nigrisquama Zett., ♀. One specimen only so named, in very bad condition. This one, at any rate, is an example of *Euplesina maculata* Fall., but although bearing the label 'Maidstone' it seems unlikely that Meade's description of *nigrisquama* (see Ent. Mo. Mag., 1894, pp. 159/160) can have been made from it, especially as there is no trace of darkening on the squamae, which is the character that Meade especially emphasised. It is of course possible that originally there were several specimens, or two at least, and that they belonged to two different species, and certainly Meade gives the impression that he had both ♂ and ♀ of something. So far as known, however, *nigrisquama* Zett. cannot claim any right to inclusion in the British list.

Germaria ruficeps Fall. One ♀ from 'Mr. Harwood, Essex,' evidently the specimen recorded Ent. Mo. Mag., 1894, p. 72, proves to be an example of *angustata* Zett.

Melanophora atra Macq. Three ♂♂ so named are, as might be expected, examples of *M. roralis* L. Two were labelled 'Silverdale,' the other 'From late Mr. Newman's Coll.' The latter was certainly a very large specimen and in bad condition, but seemed almost certainly conspecific with the other two.

Degeeria pulchella Mg. One ♀ so named proved to be a specimen of *Pentamyia tragica* Mg. It was labelled 'From *Peronea maccana*, Mr. Adkin,' also 'Billups,' and must be the one referred to in Ent. Mo. Mag., 1894, p. 158.

Macquartia spinicincta Meade. This species has long been correctly identified with *M. praefica* Mg. and the name *spinicincta* sunk as a synonym. There were four ♂♂ in the collection, all in bad condition; one was labelled 'Tingewick, Bucks., 2/8/73,' one bore no data, one 'From Mr. Brunetti' and '10.8.71,' and one 'Stowford Cleave, S. Devon, 30/6/88' (this with no abdomen). They all belonged to the species we know as *praefica* Mg. The first named specimen from Tingewick was selected as type and labelled accordingly.

Macquartia sp.n.? A ♀ so labelled is *Macquartia nitida* Zett. It was from Boughton, Kent, 25/8/91.

(To be concluded.)

ON SOME EUROPEAN SPECIES OF *CHIROTHRIPS*
(THYSANOPTERA).

BY J. DOUGLAS HOOD, M.A., PH.D.

The species of the genus *Chirothrips* Haliday are in need of careful revisional study. The present status of *C. similis*, *C. ambulans* and of two or three others, for example, is open to grave doubt; and most of the species should be scrutinised in the light of various useful characters which have been discovered in recent years. A really detailed monographic study cannot be undertaken, however, without larger series of specimens than now exist in available collections, or without access to the numerous scattered types.

This paper, in addition to describing a second new species from Cyprus,¹ revives *C. molestus* Priesner and figures its principal diagnostic characters, and also presents a new specific name for a Spanish form which had previously been treated as a variety only.

***Chirothrips insularis* sp. nov.**

(Fig. 1, a and b.)

Female (macropterous). Length about 0.9 mm. Colour of fully matured individuals dark brown, with orange internal pigmentation in pterothorax; legs about concolorous with body, the fore tibiae lighter and paling to yellow at apex, all tarsi yellow; fore wings brownish-grey, with a small, nearly colourless spot distal to scale, the tip and distal half of posterior margin darker, veins distinctly shaded to beyond fork; antennae with segment I concolorous with head and V—VIII uniform dark greyish-brown, II paler than I and somewhat lighter medially and apically, III yellowish and a trifle darker along inner surface, IV lighter than V—VIII.

Head (Fig. 1a) with its total median length slightly less than greatest width (which is across eyes) and 0.66 as long as pronotum, very slightly produced (about 4 μ) in front of eyes; surface with a few faint striae behind posterior ocelli; front narrow, rounded, and not concave; vertex normally with three pairs of small setae just behind antennae, the two inner ones nearly equally spaced, the median one somewhat more anterior; inter-ocular setae small and on the same transverse line as front margin of median ocellus; three minute pairs of setae just behind eyes and a similar lateral pair on the same transverse line. Eyes rather large and well rounded, somewhat more than 0.6 the length of head, in holotype with dorsal length 55 μ , dorsal width 31 μ , and dorsal interval 29 μ . Ocelli normal, the median one smaller, about 7 μ in diameter, and 48 μ from anterior end of head, the posterior pair about 10 μ in diameter, 23 μ apart, and 14 μ from median ocellus. Antennae (Fig. 1a) normal, segment I well rounded, II nearly straight on outer surface, its outer apical angle acute and with a minute terminal seta, the median length of this segment 25 μ , length of outer surface 26 μ , maximum diagonal length 34 μ , distance from tip of projection to pedicel of III 11 μ ; IV unusually short and stout, its width (25 μ) somewhat greater than its length; VII usually 1.5 times as long

¹ *C. cyprotes* Hood was described in the March number of this journal.

as VIII, its length 8—10 μ ; sense-cones on III and IV short, stout and simple. Mouth-cone typical, broadly rounded, extending about 76 μ beyond posterior dorsal margin of head.

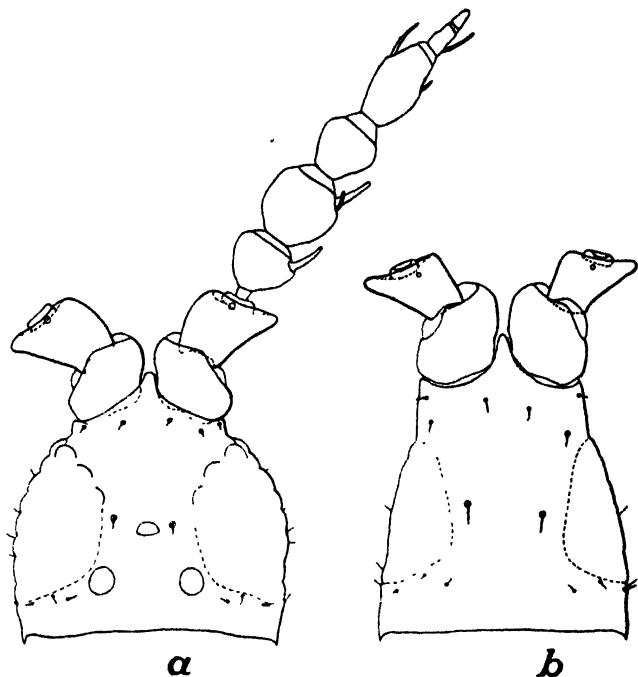


FIG. 1.—*Chirothrips insularis* sp. nov. (a) Head and right antenna, female, holotype; (b) head, male, paratype. (No antennal setae shown. Drawn by author; camera lucida.)

Prothorax about 1.6 times as broad as long and 1.5 times as long as head; pronotum with the lines of sculpture broken into distinct, but not heavy, scallops, setae at posterior angles unusually short (16—20 μ). Pterothorax normal; metascutum with the two usual pairs of setae forming a transverse line close to anterior margin; metascutellum three times as wide as long; mesosternum nearly smooth, without dark elevated scallops in the region of the anterior angles. Legs normal; fore femora with anterior dorsal margin distinctly reflexed, their sculpture heavy. Wings nearly straight, the fore pair with 2+3 (occasionally 2+2) setae near base of anterior vein and 1+1 beyond, the hind vein with 2 (very rarely 3).

Abdomen broader than metathorax but narrower than mesothorax, with the usual distinct dark lines of sculpture on dorsal surface; sub-basal chitinous line on terga I and II broken into dark dashes or scallops, on the other terga continuous; posterior margins of terga produced into a thin lobulate flange, of sterna into dark, well-separated teeth, just anterior to which, on sterna II and III, is a row of rather weak scallops; segment X not elongated or acute, its length about 62 μ , its greatest sub-basal width 50 μ ; setae greyish-

brown, normal in disposition, segment IX in holotype with setae 1—3 about 48, 51 and 66 μ respectively, and X with 1 and 2 about 86 and 80 μ .

Measurements of female (holotype), in mm.: length about 0.89; head, total length 0.087, width across eyes 0.091, greatest width across cheeks 0.088, length in front of eyes 0.020, length of cheeks 0.015, interval between bases of antennae 0.004; prothorax, median length of pronotum 0.132, greatest width 0.209, width at anterior margin 0.107; mesothorax, greatest width 0.231; metathorax, greatest width 0.196; fore wings, length 0.506, width at middle 0.040; abdomen, greatest width 0.216.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	20	25	20	23	17	28	10	7
Width (μ)	32	—	23	25	20	17	6	4

Total length of antennae 0.151 mm.

Male (brachypterous). Length about 0.8 mm. Colour much paler than that of female, fully matured individuals light yellowish-brown, with prothorax slightly darker and the head and last two abdominal segments much darker, legs about concolorous with darker portions of body, except that the tarsi are pale brownish-yellow and the middle and hind femora and tibiae are somewhat lighter along their inner surfaces; antennae paler than in female, especially in segment II, which is nearly concolorous with III.

Head (Fig. 1b) long, its total median length about 1.2 times the width across eyes, strongly produced (20 μ) in front of eyes. Eyes flattened, small, about 0.5 the length of head and much narrower than their interval, in one paratype with dorsal length 48 μ , dorsal width about 22 μ , and dorsal interval about 37 μ . Ocelli wanting. Antennae much as in female, but with the basal segment enlarged and only 3 μ apart, II with its median length 20 μ , length of outer surface 23—26 μ , maximum diagonal length 31 μ , distance from tip of projection to pedicel of III 9—10 μ . Mouth-cone extending about 83 μ beyond posterior dorsal margin of head. Prothorax more elongate, about 1.3 times as broad as long and 1.6 times as long as head; setae at posterior angles 11 μ . Wing-pads minute, about 33 μ long. Glandular areas on sterna III—V circular and small, that on III about 24 μ across (in allotype), sterna VI and VII apparently without such areas. Lateral setae on segment IX of abdomen about 70 μ .

Measurements of male (paratype), in mm.: length about 0.83; head, total length 0.096, width across eyes 0.080, greatest width across cheeks 0.081, length in front of eyes 0.035, length of cheeks about 0.017; prothorax, median length of pronotum 0.158, greatest width 0.218, width at anterior margin 0.089; mesothorax, greatest width 0.220; metathorax, greatest width 0.183; abdomen, greatest width 0.203.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	23	20	20	22	15	23	8	6
Width (μ)	34	—	21	25	18	15	6	4

Total length of antenna 0.137 mm.

CYPRUS: Zakaki Meadow, September, 1935, G. A. Mavroustakis, 'on turf,' 4 ♀♀, 4 ♂♂.

This species belongs with *aethiops*, *africanus*, *pallidicornis*, *manicatus* and *molestus* in the difficult *manicatus* section of the genus, which is characterised by the position of the interocellar

setae, the little-produced head, the non-interrupted sub-basal line on the third and following abdominal terga, and the produced outer angle of the second antennal segment. From all of these close relatives it differs in having much shorter setae at the posterior angles of the prothorax and in that the fourth antennal segment is appreciably broader than long; and from all, too, with the possible exception of *aethiops*, which I have not seen, in that the sculpture of the mesosternum is very weak and, in the region of the anterior angles, is never elevated into dark scallops. Another outstanding character of *insularis* is the marked elongation, in the male, of that part of the head which lies between the eyes and the antennae, although it should be remembered that males of *aethiops* and *pallidicornis* are not known.

Chirothrips molestus Priesner.

(Fig. 2, a.)

1926. *Chirothrips molestus* Priesner, Thys. Eur., p. 142.

1927. „ *similis* [in part; nec Bagnall], Bagnall, Ann. & Mag. Nat. Hist., Ser. 9, Vol. 19, p. 567.

1928. „ *similis* [nec Bagnall], Priesner, Thys. Eur., p. 708.

This large species was described by Priesner from one female and three males taken by him on grasses at Marchtrenk, Upper Austria, in May and June, 1925. Bagnall, who had not seen Priesner's types, placed *molestus* as a synonym of his own *similis*, which on the basis of English material had been given a name in 1909, but which in the opinion of several workers is likely to be merely a large form of *C. manicatus* (Haliday).

In June, 1927, Priesner sent me a number of unstudied Thysanoptera from his collection of duplicates, all in alcohol, including a series of de-alated females of a large *Chirothrips* taken on *Poa* at Marchtrenk, Upper Austria, the type locality of *molestus*. These prove to represent a species now unrecognised in Europe, and I have labelled them *molestus* without question.

Reference to the illustration here presented (Fig. 2, a) of the head and first two antennal segments, shows that *molestus* is not only distinct from *manicatus*, but is also one of the most easily recognised species in its section of the genus. The larger first antennal segment and the shorter second one, with its somewhat recurved apical prolongation, are significant characters for the separation of *molestus*; but far more important is the presence on the front of the head, in advance of the interocellar setae, of five

or six pairs of small setae, instead of the usual three pairs. Other important differences are found in various parts of the body; and one of these is the much heavier sculpture on the basal abdominal sterna of *molestus*, with the lines of sculpture largely broken into heavy, scallop-like thickenings.

***Chirothrips bagnalli* sp. nov.**

Female (brachypterous). Length 1.46 mm. (fully distended 1.69 mm.). Colour² uniform dark brown, with orange internal pigmentation in thorax; legs about concolorous with body, the fore tibiae lighter and paling to nearly yellow at apex, the fore tarsi brownish-yellow, the middle and hind tarsi light brown; wings brown; antennae with segments I and VI—VIII nearly concolorous with head, II about concolorous with I basally and laterally, but distinctly paler medially and apically, III brownish-yellow, IV and V brown, the latter darker and just appreciably paler than VI.

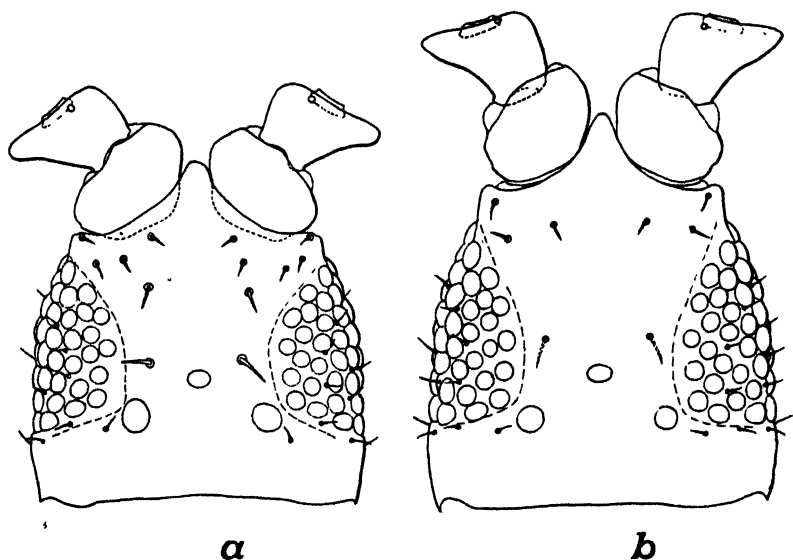


FIG. 2.—(a) *Chirothrips molestus* Priesner, head of topotypic female; (b) *Chirothrips bagnalli* sp. nov., head of female, holotype. (No antennal setae shown. Drawn by author; camera lucida.)

Head (Fig. 2b) with its total median length fully 1.1 times its greatest width (the distance across eyes and across cheeks nearly equal) and about 0.65 as long as pronotum, distinctly produced (11μ) in front of eyes, the sides of this process slightly converging to its rounded anterior angles; surface of head with several distinct striae behind posterior ocelli; frontal costa acutely produced and not notched, interval between antennal bases about 8μ ; vertex with three pairs of setae in advance of interocellars, as shown in figure; interocellar setae 34μ apart and 7μ in advance of anterior margin of median ocellus;

² After the description of the colour of the unique type was made, the specimen was treated with caustic, remounted, and the remainder of the description prepared.

occiput with the usual three pairs of setae just behind eyes and a similar lateral pair in the same series. Eyes somewhat elongated, about 0.52 the length of head, their dorsal length 67μ , dorsal width 30μ , dorsal interval 56μ . Ocelli normal, the median one 8μ in diameter and 81μ from anterior end of head, the posterior pair $8-10\mu$ in diameter, 37μ apart, and 19μ from median ocellus. Antennae normal; segment I moderately enlarged and well rounded, its length only slightly less than that of segment II; II produced as usual at apex, its outer surface decidedly concave, the apex of production acute, the minute setae placed just posterior to the extreme apex, the median length of this segment 30μ , length of outer surface 34μ , maximum diagonal length 44μ , distance from tip of projection to pedicel of III 17μ ; sense-cones simple, that on outer surface of apex of V wanting. Mouth-cone typical, broadly rounded, its length beyond posterior dorsal margin of head 90μ .

Prothorax about 1.2 times as broad as long and 1.55 times as long as head; pronotum with the lines of sculpture dark and moderately strong, showing little tendency to break into scallops; setae at posterior angles of pronotum dark brown, the inner pair 30μ , outer 35μ . Pterothorax normal; metascutum and metascutellum more heavily sculptured than usual, the dark lines showing some tendency to break into scallops, metascutellum about three times as wide as long; mesosternum with its anterior margin rather shallowly (7μ) concave, its sculpture in the region of the lateral and anterior angles broken into distinct, but not heavy, scallops. Legs normal; fore femora heavily sculptured and with the anterior dorsal margin strongly reflexed. Wings about 151μ long, quite dark brown in colour.

Abdomen normal, with the usual distinct dark lines of sculpture on dorsal surface; sub-basal chitinous line of I—VIII continuous and not broken into dashes or scallops; posterior margins of terga, including I, produced into a thin and roundly lobulate flange; posterior margin of sternum II and, to a lesser degree, of III with short, dark, scallop-like thickenings, IV—VI with these scallops absent from between the two mediad pair of setae and successively smaller, VII wholly bare; ventral sculpture weak, that of sterna II—VI forming a submarginal dark line which is indistinct and interrupted but not broken into scallops; segment X about 85μ long; setae normal in disposition, segment IX with seta I measuring about 90μ , II 80μ , and III 100μ ; X with seta I 116μ and II 113μ .

Measurements of female (holotype), in mm.: length about 1.46 (fully distended, 1.69); head, total length 0.129, width across eyes 0.115, greatest width across cheeks 0.116, length in front of eyes 0.035, lateral length of head-process 0.011, length of cheeks 0.029, greatest width of head-process 0.082; prothorax, median length of pronotum 0.200, greatest width 0.237, width across anterior margin 0.133; mesothorax, greatest width 0.281; metathorax, greatest width 0.244; abdomen, greatest width about 0.308.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	26	30	28	33	25	36	11	11
Width (μ)	41	—	24	25	20	18	7	5

Total length of antenna 0.200 mm.

SPAIN: Puigcerda, July, 1926, R. S. Bagnall, 1 ♀ on *Avena*.

The single specimen from which this species is described is part of a lot which Dr. Bagnall recorded³ as *C. similis*, and which

³ Ann. & Mag. Nat. Hist., Ser. 9, Vol. 19, p. 567; 1927.

later became part of the type series of his *C. similis* var. *productus*.⁴ The specimen, when it came into my possession, was labelled as a paratype of the latter. Bagnall's name cannot, however, be used for the species. In addition to having no standing in nomenclature because proposed as a varietal name, it is pre-occupied by *C. productus* Hood, 1927.⁵

Whether or not *C. similis* Bagnall is a synonym of *C. manicatus* (Haliday), as both Morison⁶ and Williams⁷ suspect—a supposition which is in a degree confirmed, perhaps, by Priesner's failure to discover it among his European material⁸—there can be little question that the present species is distinct from it. Morison's careful studies of the morphology of *C. manicatus* were based upon large series of specimens, some of them brachypterous, and if any had had markedly produced heads Morison would have noted the fact. Indeed, the extent of the cephalic process in this genus, as well as in all other Thysanoptera, is not a character which varies more than slightly, nor is the length of the process or absence of ocelli. Unfortunately, however, this marked production of the head (111μ in *bagnalli*, as against '7-8 μ ' in *similis*) and the much shorter pronotal setae (30-35 μ in *bagnalli*, '42-45 μ ' in *similis*) are the only characters which can be given for their separation until *similis* has fully been made known.

C. bagnalli is actually very closely allied with *C. ammophilae* Bagnall and *C. laingi* Bagnall, with both of which it agrees in the degree of production of the head. But in them the mesosternal sculpture is weak and not elevated to form dark arcs or scallops; the outer surface of the second antennal segment is nearly straight, with an exactly terminal seta on the outer angle; the pronotal setae are pale in colour; and the tenth abdominal segment is much longer. In *bagnalli* the sixth antennal segment is shorter, actually as well as in proportion to its width, than in *ammophilae*.

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April 15th, 1938.

⁴ Ent. Mo. Mag., Vol. 58, p. 184; 1932.

⁵ Journ. N.Y. Ent. Soc., Vol. 35, p. 126; 1927.

⁶ Ent. Mo. Mag., Vol. 64, p. 192; 1928.

⁷ Ent., Vol. 47, p. 53; 1914.

⁸ In this connection it must be borne in mind, as was pointed out earlier in the present paper, that the species which Priesner quite excusably identified in 1926 (Thys. Eur.) as the inadequately characterized *C. similis* is undeniably *C. aculeatus* Bagnall, 1927, and that *C. molestus* Priesner, which Bagnall assigned as a synonym of *C. similis*, is a thoroughly distinct and valid species.

Coleoptera in Dumfriesshire.—The following Coleoptera, which are all additions to my previous notes, were taken last summer, but have been only determined during the past winter: *Elaphrus riparius* Linn., in sandy places on the rivers Kirtle, Sark, etc., always singly. *Badister bipustulatus* Fab., under stones and in flood-refuse, scarce. *Pseudophonus pubescens* Müll., abundant under stones, etc. *Amara ovata* Fab., in my garden in spring. *A. familiaris* Duft., occasionally in moss in April. *Asaphidion flavipes* Linn., on sandy stretches by the Black Sark burn and river Kirtle, rare. *Hydroporus memnonius* Nic., scarce, in flood refuse only. *H. obsoletus* Aub., taken under similar conditions and equally scarce. *Orectochilus villosus* Müll., about forty under a broken tile by the river Kirtle in June, but I only succeeded in capturing about half. *Anacaena globulus* Payk., abundant in wet moss, etc. *Limnebius papposus* Muls., a ♀ in flood-refuse along the Solway in May. Dr. Joy gives its distribution as 'Eng. S. to Yorks.' *Helophorus arvernensis* Muls., a few on a sandy bank by the Black Sark burn in April. *Ochthebius bicolon* Germ. (*rufomarginatus* Steph.), rare in flood-refuse along the estuary of the Esk in May. *Sphaeridium bipustulatum* Fab., in moss, etc., scarce. *S. scarabaeoides* Linn., in cow-dung, etc., more plentiful. *Aleochara sparsa* Heer, in flood-refuse, scarce. *A. moesta* Grav. in moss, very local. *Hydrosmeeta delicatula* Shp., one example from flood refuse along the Solway in May. *H. eximia* Shp., again one specimen in flood-refuse from the river Kirtle in September. *Atheta divisa* Märk., in hedge cuttings in September, rare. *Tachyusa constricta* Er., in small numbers from April to July on sandy banks of several small streams. *T. leucopus* Msh., in the same localities, but more plentiful. *Gyrophacna nana* Payk., one swept on railway bank near Springfield in September. *Conosoma littoreum* Linn., in flood-refuse on the marsh at Gretna in May. *Bryocharis analis* Payk., Newton Moss, under a stone in May. *Bolitobius lunulatus* Linn., three in moss in a wood at Quentin's Hill. I have worked fungi in vain for years for this beetle. *Philonthus splendens* Fab., several from a dead rabbit in May and from a red-shank in September. *Stenus bimaculatus* Gyll., by no means plentiful on our rivers. *S. tarsalis* Ljun., in moss, not very common. *Ancrophorus aureus* Fauv., on river banks, etc., rare. *Trogophloeus arcuatus* Steph., in flood-refuse, scarce. *Lesteva longelytrata* Goez., abundant. *Agathidium varians* Beck., under beech bark at Quentin's Hill in November. *Liodes curta* Fair., one by sweeping roadside near Gretna in July and kindly determined by Mr. J. Collins. *Necrophorus investigator* Zett., not scarce in dead rabbits. *Catops coracinus* Kell., in carrion in spring, rare. *Colin zebei* Kr., one swept in a rough lane near Gretna on July 29th. *Hister cadaverinus* Hoff. and *Saprinus semistriatus* Scrib., a pair of each from a highly decomposed rabbit in May. *Micropeplus porcatus* Fab., scarce, by sweeping hedge-banks at Gretna and Browhouses. *Rhizophagus aeneus* Rich. (*coeruleipennis* Sahlb.), one in flood-refuse along the Solway in May. A casual capture, as seems usual with this distinct species, and I believe for the first time in Scotland. *Atomaria analis* Er., common in spring. *A. ruficornis* Marsh., in hedge-cuttings in April. *Hypnoidus maritimus* Curt., one in flood-refuse along the Solway near Gretna in May. *H. sabulicola* Boh., a dead but perfect specimen at the same time as the preceding. *Agriotes lineatus* Linn., common. *Helodes minuta* Linn., odd specimens from alder in June and July. *Cyphon punctipennis* Shp., in damp places, not scarce. *Philopodon plagiatus* Schol., on the coast but hardly common.—JAS. MURRAY, 6 Burnside Road, Gretna: May 16th, 1938.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST.

BY HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S., ETC.

(Continued from p. 126)

PYTHIDAE.

Salpingus castaneus Panz. By sweeping, beating hawthorn, fir tops, etc.; common by beating young burnt pines. (v, vi, vii, viii, ix, x.)

S. aeratus Muls. In *Daldinia concentrica* on burnt birch trees; abundant by beating burnt Scots pines. (vii, viii.)

Lissodema quadripustulata Marsh. By sweeping on stack of logs, under elm bark, by beating lime trees; abundant in topmost twigs of ash trees; common. (vi, vii, viii.)

L. kirkae Donis. In the topmost branches of ash trees, also on cut logs; very scarce. (vi, vii, viii.)

Rhinosimus ruficollis L. Under bark of beech, maple, etc.; not uncommon. (vii, viii.)

R. viridipennis Steph. In a puddle, under beech bark and on beech tree; scarce. (v, vii.)

R. planirostris F. In *Hypoxylon fuscum* with its larvae, under beech bark, on logs, by beating faggots, and abundant by beating lime trees; very common. (v, vi, vii, viii.)

OEDEMERIDAE.

Oedemera lurida Marsh. By sweeping flowers, buttercups, etc., and mixed herbage; common. (vi, vii, viii.) Purple coloured specimens occur rarely.

Nacerdes melanura Schmidt. On the wing in the town of Windsor and in forest; running on path; scarce. (vi, vii.)

Ischnomera coerulea L. By beating hawthorn and chestnut blossoms and by sweeping; common. (v, vi.) The green form is not uncommon.

I. sanguinicollis F. In numbers by beating chestnut and hawthorn blossoms; common and very widely distributed. (v, vi.) One specimen dead on leaf, 16.vi.; one just hatched in hole in ash bough, 7.ix.26.

PYROCHROIDAE.

Pyrochroa coccinea L. Larvae frequently under bark of beech trunks. (v, vi.) The perfect insect has not yet been found.

P. serraticornis Scop. On the wing, on grass and in willow-swamp; not common. (v, vi.)

SCRAPTIIDAE.

Scaptia dubia Ol. 'Taken near Windsor — Dr. Leach' (Stephens, 1932).

S. fuscata Müll. 'A single specimen taken in the inside of a hollow decayed beech in Windsor Park, 25.vi.93' (A. J. Chitty). By beating branches and brushing inside hollow trees. A certain number was found in the wood of an old ash bored by, and full of, *A. (D.) brunneus*. Fowler writes: 'The larva and the perfect insect appear to be, at all events to a certain extent, myrmecophilous.' Several pairs were taken on the wing *in cop.*, 13.vii.27. Not uncommon. (vi, vii.)

MORDELLIDAE.

Mordellistena humeralis L. By sweeping Umbelliferae; scarce. (vii.)

M. neuwaldeggiana Panz. (*brunnea* Fowler). Taken with the preceding; scarce. (vii.)

Anaspis frontalis L. Very abundant by beating hawthorn blossoms. (v.)

A. frontalis L. ab. *flavipes* Donis. By beating Mountain-Ash in flower; scarce. (v.)

A. garneysi Fowler. By beating hawthorn and elder blossoms; not uncommon. (v, vi, viii.)

A. garneysi Fowl. ab. *atra* Donis. By beating hawthorn blossoms; scarce. (v.)

A. pulicaria Costa. By beating hawthorn and sweeping thistles in flower, Umbelliferae and comfrey; common. (v, vi, vii, viii.)

A. rufilabris Gyll. By beating hawthorn, holly, cherry, laurel and *Prunus* blossoms, also by sweeping; very common. (iv, v, vi, vii.)

A. florenceae Donis. By beating hawthorn, elder, syringa and rhododendron blossoms, and by sweeping comfrey. This appears to be the only known British locality for this distinct species, but it is not uncommon. (v, vi.)

A. geoffroyi Müll. By beating hawthorn, blackthorn and *Prunus* blossoms; common. (iv, v, vi.)

A. geoffroyi Müll. ab. *4-maculata* Costa. On hawthorn blossoms; not uncommon. (v, vi.) The rare ab. *subfasciata* Steph. has not been met with.

A. geoffroyi Müll. ab. *nigra* Donis. By beating flowers of Mountain Ash and hawthorn; not common. (v.)

A. regimbarti Schilsky (*ruficollis* Fowl.). By beating flowers

of syringa, hawthorn, blackthorn, *Prunus*, etc.; very common. (iv, v, vi.)

A. costae Emery (*A. flava* L. var. *thoracica* Fowl.). By sweeping Umbelliferae, especially hog-weed (*Heracleum Sphondylium*); abundant. (viii.)

A. subtestacea Steph. By beating oaks and alders, hawthorn, elder and syringa blossoms, sweeping comfrey, etc.; very abundant. (v, vi, vii, viii, ix.) There are two forms of the female, one with a unicolorous underside and the ordinary form with a black abdomen.

A. maculata Fourc. By beating hawthorn, syringa, rhododendron and elder blossoms; very abundant. (v, vi, vii.)

A. maculata Fourc. ab. *pallida* Marsh. Occurs with the typical form; not uncommon. (v, vi, vii.)

A. latipalpis Schil. ♀ by beating elder blossoms. As no ♂ has yet been taken, this record requires confirmation.

RHIPHOPHORIDAE.

Metoeus paradoxus L. A ♀ was taken crawling up a large oak tree, 18.viii.25. This was a curious coincidence. After we had taken the larva of *Velleius* we told the Forester that there was a beetle also found in wasps' nests, and it was just after he had left us that this specimen was found. We have since reared several ♂♂ and ♀♀ from wasps' nests dug up in the district.

ANTHICIDAE.

Anthicus floralis L. By sweeping, in wild honey-bees' comb, in birds' nests; abundant in manure-heaps and haystack bottoms. (v, vii, viii, ix, x, xi.)

A. quisquilius Th. In manure-heaps; much scarcer than the above. (v, vii.)

A. antherinus L. By general sweeping and in willow-swamp; not common. (viii.)

XYLOPHILIDAE.

Xylophilus populneus F. By beating dead branches and twigs on lime trees; scarce. (viii.)

X. brevicornis Perris (*neglectus* Fowler). A single ♂ of this very rare species was taken in frass under beech bark, 12.viii.36.

X. oculatus Gyll. 'Taken near Windsor in July off willows by Messrs. H. G. Griesbach and Waterhouse, from whom I received my specimens' (Stephens, 1832). By brushing in hollow trees, beating oaks, hawthorn, etc., in cells of *A. brunneus*, on the wing, on stacks of wood; abundant on the butts of felled oaks. (vi, vii, viii.)

MELOIDÆ.

Meloë brevicollis Panz. 'Specimens have been captured near Windsor' (Stephens, 1832).

ANTHRIBIDÆ.

Brachytarsus varius F. By evening sweeping, and sweeping under fir trees, larch, etc.; scarce. (viii, x.)

Choragus sheppardi Kirby. In willow stumps in willow-swamp, under maple bark and on wood stacks; not common. (vi, ix.)

CURCULIONIDÆ.

Rhinomacer attelaboides F. In sand-pit and in plenty by beating fir tops. (v.)

Attelabus curculionoides L. By beating oaks and Spanish chestnuts, and by sweeping; common. (v, vi, viii, ix.)

Rhynchites caeruleocephalus F. 'The only specimen I have hitherto seen of this beautiful species was captured in the vicinity of Windsor' (Stephens, 1831). There is a specimen from the old B.M. British Collection now in the drawer of doubtful British Coleoptera in the British Museum.

R. aequatus L. By beating hawthorn blossoms; very common. (v.)

R. aeneovirens Marsh. By beating young oaks, birch and willow; not uncommon. (iv, v.)

R. aeneovirens Marsh. ab. *fragariae* Gyll. Occurs with the typical form; scarcer. (v.)

R. minutus Hbst. By sweeping; not common. (vi, vii.)

R. interpunctatus Steph. By beating wild *Prunus* and hawthorn blossoms and oaks; not common. (iv, v.)

R. nanus Payk. Not uncommon by beating young birches. (v, vii, viii.)

R. uncinatus Th. By beating willows and willows; not uncommon. (v, vi, vii, viii.)

R. harwoodi Joy. By beating willows. (vii.) One specimen (Allen).

R. pubescens F. By sweeping; scarce. (v.)

Deporaus megacephalus Germ. By beating *Clematis* and abundantly by beating birch. (viii.)

D. betulæ L. By beating alders and birches; common. (v, vi.)

Apion craccæ L. By general sweeping, beating willows and hawthorn, and in plenty by beating lime trees; common. (iv, v, vi, vii, viii, x.)

A. ulicis Forst. By beating furze (*Ulex europaeus*); common. (v, viii, ix.)

A. miniatum Germ. By sweeping docks, etc.; also in haystack bottoms; not very common. (vi, viii, ix, x, xi.)

A. cruentatum Walt. By sweeping; scarce. (vii.)

A. haematodes Kirby. In moss, by sweeping *Carex* in Sphagnum swamp, sorrel, etc.; common. (vi, vii, viii, ix, x.)

A. fraudator Sharp. By sweeping; scarce. (vii.)

A. brachypterum Sharp. By sweeping wood-sage, etc.; not uncommon. (vii, viii.)

A. rubens Steph. By evening sweeping; not common. (viii, ix.)

A. sanguineum De G. By sweeping wood-sage, etc.; scarce. (vii, ix.)

A. rufirostre F. By sweeping mallows; common. (vii.)

A. difforme Germ. By sweeping, by beating lime trees, and on logs; not common. (v, vi, vii, viii.)

A. dissimile Germ. Under faggots in willow-swamp; scarce. (x.)

A. varipes Germ. In cut grass, grass-tufts, by sweeping and on cut pine tree; not common. (iv, v, vi, vii, ix.)

A. laevicolle Kirby. 'St. Leonard's, near Windsor — Mr. Waterhouse' (Stephens, 1831).

A. apricans Hbst. By beating fallows and sweeping in willow-swamp; not common. (iv, viii.)

A. assimile Kirby. In flood-refuse, in sand-pit and by sweeping; common. (iv, vii, viii, x.)

A. trifolii L. In cut grass, by sweeping melilot, etc.; common. (vi, vii, viii, ix.)

A. dichroum Bedel. By sweeping in willow-swamp, etc., in moss, flood-refuse and by beating crab-apple blossoms; very abundant by beating lime trees. (iv, vi, vii, viii, ix, x, xi.)

A. nigritarse Kirby. By sweeping, in moss, cut hay, haystack bottoms, and abundant by beating lime trees. (v, vii, viii, ix, xi.)

A. stolidum Germ. By sweeping Ox-eye Daisy (*Chrysanthemum Leucanthemum*); very local. (vi.)

A. hookeri Kirby. By sweeping Ox-eye Daisy, etc., but especially Chamomile (*Matricaria Chamomilla*); not common. (vi, vii, ix.)

A. aeneum F. By sweeping mallows; common. (vii.)

A. radiolus Kirby. Common on mallows. (vi, vii, x.)

A. onopordi Kirby. By sweeping vetches, in willow-swamp, etc.; common. (v, vi, vii, viii, ix.)

A. carduorum Kirby. In cut hay, by beating old hawthorn trees, sweeping docks, etc.; common. (v, vi, viii, ix, x, xi.)

A. vicinum Kirby. 'Windsor' (Fowler, 1891).

A. virens Hbst. In flood-refuse, in moss in willow-swamp, in straw in deer-pen, by sweeping, and on clover, eating holes in the leaves; not uncommon. (iv, vi, vii, viii, x, xii.)

A. pisi F. By sweeping; scarce. (vii, ix.)

A. aethiops Hbst. In moss in willow-swamp and by sweeping; not common. (vi, vii, ix, x.)

A. ebeninum Kirby. In flood refuse, in puddle, by sweeping vetches, etc.; rather common. (iv, v, vii, viii, x.)

A. ervi Kirby. By beating lime trees, by sweeping Meadow Pea (*Lathyrus pratensis*), etc.; common. (vi, vii, viii, x, xi.)

A. platalea Germ. (*unicolor* Fowler nec Kirby). By sweeping; scarce. (v, vi, x.)

A. meliloti Kirby. 'Windsor—Mr. Waterhouse' (Stephens, 1831). Abundant by sweeping common Yellow Melilot (*Melilotus officinalis*). (vii.)

A. livescerum Gyll. By sweeping; scarce. (viii.)

A. loti Kirby. By sweeping Comfrey, *Stachys* and vetches, in moss in willow-swamp and in haystack bottoms; very common. (v, vi, vii, viii, ix, x, xi.)

A. tenue Kirby. By sweeping *Melilotus*; scarce. (vii.)

A. simile Kirby. By sweeping and under faggots in willow-swamp; scarce. (vii, viii, ix, x.)

A. pubescens Kirby. By sweeping in willow-swamp; scarce. (viii, ix.)

A. marchicum Hbst. By sweeping in plantations, etc.; common. (v, vi, vii, viii, ix, x.)

A. violaceum Kirby. In flood-refuse, by sweeping rushes, ox-eye daisy, vetches, docks, etc.; common. (iv, v, vi, ix, x.)

A. hydrolapathi Kirby. By sweeping docks; local. (iv, viii.)

(To be continued)

Thanasimus formicarius L. in Dumfriesshire.—On the afternoon of April 26th last, I caught a specimen of this somewhat uncommon beetle crawling on a newspaper in my sitting room. The weather at the time was bright and sunny. I know of no record from any immediate area. In nature it seems to frequent the burrows of wood-boring beetles.—JAS. MURRAY, 6 Burnside Road, Gretna: July 17th, 1938.

ELATER RUFICEPS MULS.: A BEETLE NEW TO BRITAIN.

BY A. A. ALLEN.

Elater ruficeps Mulsant & Guillebeau, Ann. Soc. Linn. Lyon. (n.s.), ii, 1854-55, p. 29 (*E. pallidulus* Reitt.).

Fusco-castaneous above, with the head, basal third of thorax, and base and suture of elytra narrowly ferruginous, the colour not sharply defined; under surface, legs and antennae ferruginous; body rather thickly clothed with long outstanding pale pubescence. *Antennae* with the third joint subcylindrical, the succeeding joints all longer than broad and feebly serrate. *Head* deeply sunk in the thorax and densely punctured. *Thorax* distinctly broader than long, broadest at middle, very slightly narrowed to base, posterior angles with a fine keel, sides gently rounded in front; very shining, evenly and moderately closely punctured. *Elytra* more attenuated behind than in most species of similar size, broadest before middle and thence steadily contracted to apex, somewhat shining, with delicate striae and flat, finely and unevenly punctured interstices; their colour is concealed in some lights by the pubescence, which is, however, easily rubbed. Length 5-6 mm.

Windsor Forest; one specimen in wood-mould in an old oak, April 1st, 1938. It appears to be scarce on the Continent, where it has been found in Germany (very rarely, according to Reitter), Austria, Switzerland, France and Sweden. It is at once distinguished from all our other species of *Elater* by its colour, especially by not having the underside, antennae and femora black, by the conspicuous pubescence and the small size. It is the smallest European species of the genus.

63 Blackheath Park, London, S.E.3.

April 9th, 1938.

A NOTE ON *XANTHOLINUS ANGUSTATUS* STEPH.
(COL. STAPHYLINIDAE).

BY W. O. STEEL.

In the 'Coleopterorum Catalogus,' Bernhauer, pars. 57, 1914, and Scheerpeltz, pars. 129, 1933, the synonymy of this species is given as follows:—

- X. angustatus* Steph.
- = *ochraceus* Gyll. (nec Grav.).
- = *punctulatus* Er.
- = *scoticus* Joy.
- ab. *nitidicollis* Reitt.

Angustatus Steph. and *ochraceus* Gyll., however, are two distinct forms. *Angustatus*, the type of which I have seen, has the thorax smooth, without any trace of the transverse ground sculpture which is present in *ochraceus*.

Reitter, taking the two species as identical and knowing the *ochraceus* form, established his ab. *nitidicollis* for specimens with the smooth thorax. On the other hand, Joy, also taking them as identical and knowing the *angustatus* form, described his *X. scoticus* for specimens with the sculptured thorax.

Erichson and Fauvel took *ochraceus* to be a variety of *punctulatus* Payk, the latter distinguishing it from the type form 'parson corps chagriné.'

The two forms of *angustatus* are not specifically distinct, and intermediate forms occur. In Europe as a whole the var. *ochraceus* seems to be the commoner form, but it appears to be restricted to the northern part of the British Isles, the type form only occurring in the south.

The revised synonymy should read:—

X. angustatus Steph.
= ab. *niticollis* Reitt.
var. *ochraceus* Gyll.
= *punctulatus* Er.
= *scoticus* Joy.
= *angustatus* Reitt.

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GANGLBAUER. Käf. Mitt. Eur., II, 1895, p. 480.
REITTER. Best. tab. Eur. Col., LXIV, 1908, p. 18: Fn. Germ., II, 1909, p. 136
16 Upsdell Avenue,
London, N.13.
July 2nd, 1938.

NEW SPECIES OF STAPHYLINIDAE FROM MAURITIUS AND REUNION, COLLECTED BY MR. J. VINSON.

BY MALCOLM CAMERON, M.B., R.N., F.R.E.S.

Thoracophorus elongatus sp. nov.*

Sub-parallel, dull, black, the thorax and elytra with slight reddish-brown tinge, the apex of the abdomen yellowish-red. Antennae black, the first and eleventh joints obscurely reddish. Legs reddish. Length 3 mm.

In colour and lustre very like *corticinus*, but narrower and more parallel, the antennae much thinner. Head subtriangular, a little broader than long, narrower than the thorax, the side margins sharp, elevated, gradually con-

*Types or co-types of the species described are in my collection.

verging in front, the anterior border narrowly truncate, the vertex elevated and bi-carinate, sulcate behind between the keels, between them in front with a shorter and much finer keel; eyes rather small, only partly visible from above; the whole surface strongly coriaceous and impunctate. Antennae short, the first and second joints stout, third narrower, about as long as the second, fourth short, oval, fifth and sixth moniliform, seventh slightly transverse, eighth to tenth more strongly. Thorax scarcely broader than long, the anterior angles prominent and everted, the sides behind straight and parallel to the briefly rounded posterior angles, then sinuately retracted to the base; in the middle in front with a broad and deep fossa, its side margins carinate, its fundus with two or three fine keels, on each side with another keel extending from apex to base and yet another adjacent and parallel to the lateral margin and extending from the anterior to the posterior angle, in the middle with three smaller keels extending from the base to the fossa in front, the whole region strongly coriaceous and impunctate. Elytra a fourth longer and a little broader than the thorax, each with six keels, the sutural margin also elevated, strongly coriaceous. Abdomen cylindrical, the first two segments with numerous more or less parallel keels, the third and fourth with fewer and more obsolete and interrupted ones, the whole surface strongly coriaceous.

MAURITIUS : Gorges, Riv. Noire, 23.i.37. Unique.

***Paederus insularis* sp. nov.**

Shining, black, the elytra bright blue. Antennae blackish, the first three joints reddish-yellow. Palpi reddish-yellow, the third joint infusate. Legs yellowish-brown, the apices of the tarsal joints blackish. Length 6.5 mm.

In colour and build similar to *edwardsi* Bernh., but a little smaller and narrower, the antennae similarly constructed but thinner, the head of similar shape but with the punctures finer, those of the thorax equally sparing but much finer, the elytra slightly longer and scarcely as coarsely punctured, the abdomen much more finely and more sparingly punctured. Head slightly broader than the thorax, as long as broad, the eyes rather small, the post-ocular region gently rounded and retracted, indistinctly bi-impressed on the front, the vertex and front impunctate, elsewhere with some scattered punctures of small and very small size; ground sculpture absent except at the base. Antennae long and slender, the penultimate joints about a half longer than broad. Thorax oval, a little longer than broad (4.5 : 3.5), impunctate along the middle, on each side with an irregular row of six or seven very fine punctures, towards the sides with a few others. Elytra as long as and at the base scarcely broader than the thorax, very slightly widened behind, coarsely and rather closely punctured. Abdomen very finely and sparingly punctured. Pubescence throughout rather long and scanty.

♂. Fifth sternite feebly arcuately emarginate at the middle of the posterior border; sixth deeply narrowly emarginate, the apex of the emargination rounded, its edges bordered.

RÉUNION : Salazie. J. Vinson. 1.xi.37.

***Heterota obscura* sp. nov.**

Greasy lustrous, black, the elytra pitchy black, the suture posteriorly very narrowly and obscurely reddish. Antennae black, the first two joints and legs reddish-yellow. Length 3 mm.

Somewhat similar to *plumbea* Waterh. but not so black, the thorax shorter and more transverse, the elytra shorter, the puncturation of the head and thorax more distinct, less confused with the ground-sculpture, the elytra much more distinctly punctured. Head transversely suborbicular, narrower than the thorax, rather closely but obsoletely punctured, distinctly coriaceous. Antennae slender, the second joint longer than the first, the third a little shorter than the second, fourth and fifth a little longer than broad, sixth and seventh about as long as broad, eighth to tenth transverse, about a half broader than long. Thorax transverse (4.5 : 3.5), the sides rounded in front, retracted and a little sinuate behind, the posterior angles obtuse, before the scutellum lightly impressed, the puncturation finer, more obsolete and sparing than on the head, distinctly coriaceous. Elytra longer (4.5 : 3.5) and broader than the thorax, closely, finely but distinctly punctured, finely coriaceous. Abdomen parallel, very finely, moderately closely punctured, a little more sparingly on the penultimate segment. Pubescence yellow, moderately long and moderately close.

RÉUNION : Saint Denis. ii.35.

***Aleochara* (s.str.) *vinsoni* sp. nov.**

Shining, black, the elytra and abdomen sometimes with slight brassy reflex. Antennae black, the first two joints and legs reddish-yellow. Length 4.5 mm.

In size, build and antennal structure scarcely differing from *egregia* Aptelb., but differently coloured, the antennae not quite so stout, the puncturation of the thorax much less fine and less close, that of the elytra less fine and less close, the abdomen more finely and less closely punctured. Head moderately finely and moderately closely punctured. Antennae with the third joint a little longer than the second, fourth slightly, the following more strongly transverse, the penultimate fully twice as broad as long. Thorax transverse (5 : 3.5), the sides evenly rounded, more retracted in front, the sculpture as on the head. Elytra as long as but slightly broader than the thorax, more deeply and much more closely punctured. Abdomen a little narrowed before the apex, very finely and sparingly punctured, more closely at the bases of the first three segments.

♂ (?). Eighth tergite almost truncate and very finely and closely crenulate.

MAURITIUS : Gorges, Riv. Noire, 20.ii.37.

15 Teesdale Road,

Leytonstone, London, E.11.

June 17th, 1938.

PASSALIDAE (COLEOPTERA) FROM THE CYCLOPS MOUNTAINS,
DUTCH NEW GUINEA.

BY W. D. HINCKS, M.P.S., F.R.E.S.

Through the kindness of Mr. G. J. Arrow I have been able to examine a small collection of Passalidae collected by Miss L. E. Cheesman in Dutch New Guinea. Twenty-four examples of eight species were included, a species of *Labienuus* being new, whilst a *Leptaulax* represented by two specimens may also be undescribed but in the present unsatisfactory state of that genus is not dealt with here.

It is interesting to compare the list below with that of Miss Cheesman's previous expedition, of which a report by the present writer has already appeared.*

Subfamily AULACOCYCLINAE.

Aulacocyclus perlatus Kaup, 1868.

1 ex. Cyclops Mts., Sabron, 930 ft., v.1936.

Mr. Dibb has examined this specimen and confirms the identification.

Subfamily MACROLININAE.

Analaches bicavis Zang., 1905.

3 exs. Cyclops Mts., Mt. Lina, 3,500 ft., iii.1936.

2 exs. Mt. Cyclops, 3,500 ft., iii.1936.

Cetejus obliquus Kirsch, 1877.

5 exs., Mt. Cyclops, 3,500 ft., iii.1936.

These do not entirely agree with a paratype of Kirsch's species which I have examined, but differ only in minor varietal details.

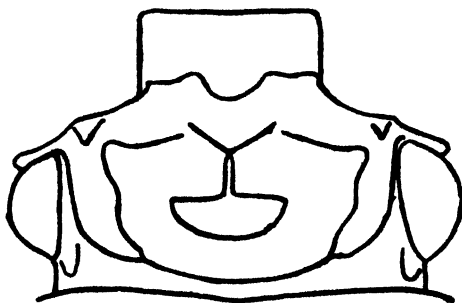


FIG. 1.—Head of *Labienus truncatus* sp.n.

***Labienus truncatus* sp.n.**

Antennae with six lamellae, three basal lamellae extremely short, three apical ones moderately short. Labrum, anterior margin straight. Mandibles as in *Labienus gracilis* (Heller). Head polished and impunctate throughout; frontal ridges ending midway between central tubercle and outer tubercles; inner tubercles obsolete; outer tubercles composed of two tubercles, left outer tubercle with prominent inner component; right outer tubercle subtruncate, outer angle more strongly angulate than inner; depressed area anterior to frontal ridges rather rough. Pronotum transverse, polished and impunctate; median groove strong, incomplete in front and behind; scars with a few hair-bearing punctures; underside with moderately copious red brown hair. Elytra impunctate through-

* Hincks, W. D. Passalidae from Papua Collected by Miss L. Cheesman, Nova Guinea, N.S., 1, 1937: 112-123. Since this paper was published I have seen a further two examples of the supposed *Leptaulax sambawae* Grav. referred to on page 122. These bear the data Papua: Mondo, 5,000 ft., ii, 1934 (Miss L. E. Cheesman).

out; hair-tufts of shoulders absent. Mentum scars close together, cutting off a subtriangular median area; posterior median area punctured; side-pieces with punctures more or less confined to outer side and posterior angles. Mesosternum shining and impunctate. Metasternum disc impunctate; posterior intermediate areas very scantily punctured; anterior intermediate areas, lateral areas and posterior angles with copious hair-bearing punctures. Abdomen impunctate throughout. Length: 36 mm.

Type: DUTCH NEW GUINEA: Mt. Cyclops, 3,500 ft., iii.1936. (Miss L. E. Cheesman) in British Museum. *Paratypes*: 1 example with same data as type; 3 examples, Cyclops Mts., Mt. Lina, 3,500 ft., iii.1936, and 1 example, Cyclops Mts., Mt. Lina, 3,500-4,500 ft., iii.1936, in British Museum and Hincks and Dibb collection.

This species is extremely closely allied to *Labienus gracilis* (Heller), from which it differs almost solely in the structure of the head. In the present species both outer tubercles are composed of two conjoined tubercles. In *G. gracilis* the inner component of the right outer tubercle is obsolete. The original specimens of *L. gracilis* were taken in the Toricelli Mountains, and it is possible that the present material from the Cyclops Mountains may represent merely a local form of a variable mountain species. Much further material is however required before this can be established. The material in the Hincks and Dibb collection is mostly from the Bolan Mountains and appears to be quite typical of *L. gracilis*.

Protomocoelus heynei (Kuw.), 1891.

1 ex., Cyclops Mts., Sabron, Camp 2, 2,000 ft., vi.1936.

Gonatas minimus Kuw., 1891.

1 ex., Cyclops Mts., Sabron, 1,200 ft., 15.v.1936.

Subfamily LEPTAULACINAE.

Leptaulax bicolor F., 1801.

2 exs., Cyclops Mts., Sabron, 930 ft., vi.1936.

Leptaulax sps.?

3 exs., Mt. Cyclops, 3,500 ft., iii.1936.

Length 14-16 mm. These three examples do not exactly agree *inter se*, nor do they work out satisfactorily with Gravelly's key (Mem. Indian Mus., 7, 1918: 118-19). A new species may be represented or one of Kuwert's names now synonymised may apply. I do not feel justified in dealing with it until the large mass of material in the Hincks and Dibb collection has been worked out.

'Sudest,' 46 Gipton Wood Avenue, Leeds, 8.

July 3rd, 1938.

A PTERERGATE OF *ACANTHOMYOPS* (*CHTONOLASIUS**) *FLAVUS* F.
(HYM. FORMICIDAE).

BY HORACE DONISTHORPE, F.Z.S., F.R.E.S., ETC.

On June 25th last Mr. R. B. Benson captured a pterergate of *Acanthomyops* (*Chtonolasius*) *flavus* F. in a colony of that species on the downs near Princes Risborough, Bucks.

At first sight it might be taken for a macrergate, being large, robust and dark in colour. The possession of vestigial wings, however, proves it to be a pterergate.

Description.—Yellowish-brown, the greater part of the head darker, mandibles brownish-yellow, cheeks, scale, antennae and legs yellow.

The *pro-* and *mesonotum* are robust, and a *metanotum*, pale in colour, is distinctly indicated. The vestigial *fore wings* spring from the *mesothorax* and are chitinous, triangular and pointed at the apex, and of equal length (*long.* .2 mm.). The *hind wings* are still more vestigial and are placed on each side of the *metanotum*. They consist of two very small projecting tubercles, which are longer than broad (*long.* .05 mm.).

Long. 4 mm. Specimen in B.M. Coll.

A pterergate is defined in 'British Ants' as 'a worker with vestiges of wings, the thorax being either that of the normal worker, or somewhat approaching that of the female.'

As far as I am aware, this is only the third pterergate that has been taken in Britain.

The first was taken by Mr. J. H. Keys in a colony of *Myrmica scabrinodis* Nyl. at Yelverton, Devon, in August, 1913. It was a little larger than the other workers and possessed a minute chitinous nodule anteriorly on each side of the mesothorax. Specimen in Donisthorpe Coll. in B.M.

The second was also a specimen of *Myrmica scabrinodis* Nyl. taken by me in a colony of that ant at Weybridge, Surrey, on July 30th, 1915. Two small forewings were present which possessed traces of veins; the one measured 2 mm. in length and the other only .7 mm. The hind-wings were represented by two very small projecting tubercles. Specimen in Donisthorpe Coll. in B.M. Coll.

Historical. In 1878 Dewitz called attention to the fact that the imaginal discs of larvae of workers of the common European ant, *Formica rufa* L., possessed minute vestiges of wings, which he also traced in the pupal stage. These are situated on the sides of

* This is the correct spelling of '*Chtonolasius*.' Emery altered it to '*Chthonolasius*' in 1925, and everyone, including the writer, followed him. Emery also incorrectly stated that Ruzsky had not cited a genotype for '*Chthonolasius*.' He also in 1916 gave the date of Ruzsky's subgenus as 1908 (in the Gen. Ins. he gives 1913), whereas the date is 1912. Ruzsky cited *flavus* F. as the type of his subgenus *Chtonolasius*, and spelt it thus.

the two posterior thoracic segments and normally disappear in the pupal stage.

Wheeler in 1905 suggested that owing to the highly variable character of vestigial organs, one should occasionally find adult worker ants with such structures, and indeed, among the thousands of workers which had come under his observation up to that date, he had discovered four such individuals. On September 5th, 1904, he found in a colony of a form of *Myrmica scabrinodis* at Bronxville, New York, three workers which were normal in every other respect but bearing vestiges of the anterior wings. In one specimen these wings measured nearly 1.7 mm. in length. In a second these organs were barely .4 mm. long, and consisted of small opaque pads or sacs. In the third specimen the right wing consisted of a small nodular appendage and the left of a minute papilla. His fourth individual was a soldier of *Cryptocerus aztecus* Forel, which he took on December 27th, 1900, near Cuernavaca, Mexico. This specimen was a normal soldier, except that it bore 'on the external angles of the mesonotum a pair of symmetrical organs representing anterior wings.' They measured .8 mm. in length. It is in this paper that he first suggested the name of 'pterergate' for such abnormalities.

In 1915 Donisthorpe described in 'British Ants' the specimen taken by Keys, mentioned above, and in the Entomologist's Record of the same year he records the one taken by himself at Weybridge. In 1916 Wheeler, in a paper on an anomalous blind worker ant, writes: 'The absence of wings is another character in worker ants, which is sometimes supposed to have arisen as a mutation, but, though very rare, anomalous workers with vestigial wings (pterergates) are known to occur. . . . As the worker phase of the ants must have been perfected and fixed as a family character not later than the Eocene Tertiary, and probably as early as the Cretaceous, it is not surprising that at the present time organs characterising stages intermediate between the workers and females should be so rarely resuscitated as anomalies.'

In 1927 Viehmeyer described as a 'Zwischenform' a specimen of *Myrmica ruginodis* Nyl. var *ruginodo-laevinodis* For. This was clearly a pterergate (as pointed out by me in 1922) from his own description, as it possessed a partly female thorax and vestigial wings.

In the same year Teranishi described and figured what he called an 'ergatogyne' of *Technomyrmex gibbosus* Wheeler, taken in his garden at Osaka. The paper is in Japanese, but there

is an abstract in English, and by his description and figure this also is undoubtedly a pterergate.

The above-mentioned pterergates are all that have been recorded, as far as I am aware.

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July 9th, 1938.

THE TACHINIDAE OF THE MEADE COLLECTION.

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(Concluded from p. 157)

Macquartia ciliaris Zett. A ♀ so named, without data, proved to be *Rhynchista prolixa* Mg. This probably disposes of the record of *ciliaris* in Ent. Mo. Mag., 1891, p. 156.

Loewia brevifrons Rond. Two bad specimens ♂ and ♀, apparently those referred to in Ent. Mo. Mag., 1892, p. 261. Both labelled 'Manningham, Bradford,' the ♂ (without abdomen) bearing date 3/8/77 and the ♀ 30/8/77. These two belong to the species now called *foeda* Mg. (= *intermedia* B. & B.). Three other ♀ ♀ in good condition from 'Felden, Herts, 24.vii.99, A. Piffard,' proved, however, to be *phaeoptera* Mg. True *brevifrons*, if a distinct species, still seems unknown as British.

Aphria angustifrons Meade. One ♂ only, a very worn specimen with most of the hairs and setae rubbed off, mounted on a card, and on back of card 'Folkestone' and on a separate disc 'From Mr. Pascoe.' Evidently the

actual specimen referred to in Ent. Mo. Mag., 1894, p. 70, and therefore must be regarded as the type of the species, and it has now been clearly labelled as such. It is a ♂ of *Rhynchista proluxa* Mg., so that the name *angustifrons* Meade sinks as a synonym of *proluxa*.

Bithia cinerea Meade. This species was described in Ent. Mo. Mag., 1894, p. 71, in the 'Supplement to Annotated List of British Tachinidae,' although it had not been found in Great Britain, the single specimen upon which it was based having been sent to him from the Continent by Kowarz. The specimen in question was found in the collection: it is a ♂ and bears a small label 'Carlsb'd, 24.6.77,' a brown disc with 'From Kowarz, Asch' and another label '*Demoticus* sp.' Brauer and von Bergenstamm, Denks. Akad. Wien, LXI, p. 622, suggested that it might be *Sesiophaga glirina* Rond., and it proves to belong to that non-British species. The name *cinerea* sinks therefore to *glirina* Rond. The single specimen has been clearly labelled as the type of Meade's species.

Sarcophaga agricola Mg. There was a series of a dozen specimens all very much alike over this name. No question of importance arising in connection with these, only three were brought away for examination, and those all proved to be *incisilobata* Pand. Two had no data, the third was labelled 'Risboro', Bucks., 28/6/79.'

Sarcophaga fulvicauda Meade. This species was described as new in Ent. Mo. Mag., 1888, p. 28. There are two ♂♂ in the collection, probably the actual two mentioned by Meade, one being labelled 'Newton, Oxon, 21/7/76,' the other without data. They are specimens of *S. pumila* Mg., the form with the second genital segment more or less red. The one with data is being clearly marked as the type, and the name of course sinks to *pumila*.

Sarcophaga similis Meade. There were six specimens over this name in the collection. The species was described by Meade in Ent. Mo. Mag., April, 1876, p. 261. It was defined as being like *carnaria* L. and differing only in 'one essential point, viz., by the central portion of the edge of the second abdominal segment being unarmed with spines.' In 1896 (Rev. d'Ent., pp. 192-3) Pandellé clearly described several species resembling *carnaria* L. but without spines on the second abdominal segment, and adopted Meade's name of *similis* for one of them, and it is this species that has been known by subsequent students by that name, and it has been found in Britain. Unfortunately none of the six specimens in the collection at Leeds belongs to the same species as Pandellé's, but a consideration of the following facts has led me to accept Pandellé's adoption of Meade's name.

Meade, in describing new species, never selected any individual specimens as types, and in the case of *similis* gave no help at all even by locality citation to enable one to trace the actual specimen or specimens he had before him at the time of description, for he dismissed it with 'generally distributed, but much less common than *S. carnaria*.' He must have seen a number of specimens or he would scarcely have been likely to write 'generally distributed,' and that these were not necessarily only from his own collection we know from a footnote on p. 260, where he states that he had had the whole of the *Sarcophaga* from the Verrall collection to

study. Judging from the six specimens still present under the name in his own collection, there was a number of species involved as well. These specimens are one *subvicina* Rond. (= *vicina* Villen) from 'Apperley, Bradford, 13/9/75'; one *incisilobata* Pand. from 'Newton, Oxon, 24/7/77'; one *aratrix* Pand. from 'Newton, Oxon, 21/6/76,' and another without data, probably taken with the last one; one *melanura* Mg. labelled 'F. Walker 154' and another from Kowarz labelled 'Asch 6.' These six specimens cannot all (if indeed any of them) have been before him when the species was described, as at least one *aratrix* and the *incisilobata* bear later dates; the *melanura* have three postsutural dorsocentral bristles and generally fail to agree with the diagnosis, and seem likely to have been added carelessly at some later date, leaving only two, the *subvicina* and one of the *aratrix*, as possible original specimens, and of these the *aratrix* bears no date of capture, and *subvicina* normally possesses the spines on the second abdominal segment, the absence of which is the only definite characteristic accorded to *similis*. In such conditions and in view of the fact that Meade must have had other specimens before him when he described his species, it seems most unsuitable to designate either of these two as the type. The original series may have included several other species which would have agreed with the brief diagnosis, including possibly even Pandellé's *similis* itself, and in the circumstances it seems best to regard Meade's species as a hopeless mixture and the type as untraceable, and to accept Pandellé's use of the name as constituting a selection of one of the species from the mixture and the limitation of the name to that species.

Brachycoma smerintheta Meade. This species was described in Ent. Mo. Mag., 1892, pp. 75/6, from a single ♀ which was found in the collection, and has now been labelled as the type specimen. It proved to be an example of *Atropidomyia irrorata* Mg. and the name *smerintheta* Meade therefore becomes a synonym of *irrorata* Mg. Meade recorded the specimen as having been bred from *Smerinthus populi* L., hence the name *smerintheta*. The name on the label, which is still attached, is not clear; the generic name is not written in full, it is indicated by the initial S only, and the specific name looks like an attempt to copy a name written by someone else and not understood, and would do better for *populnea* than *populi*, and *Saperda populnea* F. is the recorded host of *irrorata* Mg. The actual labels on the specimen are 'From Bridman, Oct./82' (sic) and 'S. *populi*isa? F. Norgate' (sic).

Brachycoma erratica Mg. One specimen only, a ♂ labelled 'from Mr. Watkins, Painswick, Gloucester,' 'D.66—3,' and evidently one of those upon which Meade's record is based, Ent. Mo. Mag., 1894, pp. 109/110. It is an example of *Ptychoneura cylindrica* Fall., so that the name *erratica* Mg. must disappear from our lists.

Metopia rubritarsis Zett. Three ♀♀ were brought away and four others left. Those brought proved to be *Ptychoneura rufitarsis* Mg., as expected. Two were labelled 'Felden, Herts., 10.vii.94. A. Piffard,' the other without data being apparently another of the same lot.

Metopia argyrocephala Mg. Four brought away seem all to be just ♀♀ of the common *leucocephala* Rossi. Meade, however, seems to have fancied that he had ♂♂ which resembled the ♀♀ of normal *leucocephala*, and if so they would be very different from the ♂♂ of *leucocephala* Rossi. All one can say now is that there were no such specimens found in his collection. The four examined were labelled respectively, one 'Woking, 3.6.93, Beaut,' one 'Priory Ulverston, June, 97,' one 'Guestling, Rev. E. N. Bloomfield,' and one 'Croydon, 9/8/73.'

Morinia melanoptera Mg. Four ♀♀ so named proved to be *Engyrops peccolii* Rond. All were from Newton, Oxon, two bearing date 16/6/78.

As said at the beginning, by no means all the species mentioned in Dr. Meade's papers were to be found in his collection, and two at least of his new species were not represented, namely *Degeeria dali* and *Nemoraea quadraticornis*. My friend, Mr. J. Collins of Oxford, kindly looked through the Dale collection at the Hope Museum and found what must be regarded as the type of *Degeeria dali* and, with the kind permission of Prof. G. D. Hale Carpenter, was able to send it to me for determination, and with it also he sent the two specimens standing over the name *Clytia rotundiventris* Fall. and so enabled two problems to be solved.

Excepting therefore *Phorocera incerta*, of which the actual type was not seen but fairly reliable paratypes were examined, the only one of his new species not seen by me is *Nemoraea quadraticornis*, which was based on a specimen taken in 1893 near Ipswich by Claude Morley and sent to Meade by Rev. E. N. Bloomfield. This specimen, Mr. Morley informs me, is still in his possession, but he expressed unwillingness to forward it for me to see. This, however, is of little importance, because the late Major E. E. Austen examined it years ago and reported that it was a specimen of *Mimicropalpus pudicus* Rond. (see Ent. Mo. Mag., 1898, pp. 36-38).

Degeeria dali Meade ♂. Evidently the actual specimen upon which the species was based (see Ent. Mo. Mag., 1894, p. 159): it is gummed on to a card, and on the back of the card in Dale's handwriting is 'G.W., May 4th, 1894' (G.W. standing apparently for Glanvilles Wootton). This is an example of *Ceromastia muscaria* Fall. (= *sordidissima* Zett.), so that the name *dali* sinks to *muscaria*. The specimen has been labelled as the type of Meade's species.

Clytia rotundiventris Fall. Meade records this species (Ent. Mo. Mag., 1892, p. 79) as 'Rare; in Mr. Dale's collection.' The two specimens so named which Mr. Collins sent are *Myiobias*: one *M. fuscana* R.-D. ♂, the other a ♀, perhaps *inanis* Fall. One has an undecipherable label, the other no data. It is very improbable that *Clytia rotundiventris* Fall. will prove to be British.

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THE MALLOPHAGA (BITING-LICE) RECORDED FROM THE
PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

This paper is the fifth of a series devoted to listing the ectoparasitic insects recorded from Pacific Island hosts and contains check-lists and host-lists of the Mallophaga recorded for the most part from birds (domestic and wild).

Following the principles laid down in the previous lists, I have only cited references which have some bearing on the species and records relative to the Pacific Islands. Most of the references have been checked against the originals.

It is quite obvious from a glance at the lists which follow that our knowledge of the Mallophaga parasitic on the innumerable birds which abound in the Pacific regions is extremely poor. A vast amount of collecting is necessary and should be done as soon as possible, as many of the birds are nearing extinction. The Mallophaga parasitic on birds of the interesting Galapagos Is. have received more attention than those from any other of the island groups, but even these are not well known. Nothing, except for a revision of a few species by Ferris, has been published on the lice of Galapagos Is. birds since about 1906. Kellogg, in association with other workers, has contributed most towards our present-day knowledge of them, but unfortunately until such time as further material is available which can be worked out in conjunction with Kellogg's collection no important advances can be made. Kellogg has drawn attention to the phenomenon known as straggling and seems perfectly satisfied, as shown by his extraordinary lists of hosts upon which some of the lice were said to have been taken, to accept it as being of common occurrence in the case of the parasites of the Galapagos birds. I am not prepared to believe that straggling occurs on these islands to anything like the extent to which it is stated. From my own experience of collecting I know full well how easy it is to produce artificial examples of straggling. The report on the Mallophaga of Hawaiian birds by Kellogg and Chapman contains some very remarkable instances of straggling which seems to me to be merely the result of carelessness on the part of the collectors. However, these remarks are made merely as a warning to future collectors.

It is interesting to note that the paper by Kellogg and Chapman on the Mallophaga of Hawaiian birds was published twice, once in the *Journal of the New York Entomological Society* and again in Vol. III (pp. 305-321) of the *Fauna Hawaiiensis*. Some years

ago this struck me as being rather odd, so I wrote to Dr. R. C. L. Perkins, F.R.S., for an explanation. He replied, saying that it was an extraordinary thing that this paper should have been published in the *Fauna Hawaiiensis*, for to the best of his knowledge a good collection of Mallophaga was made in the Hawaiian Is. during the time of his associations there and that they were never worked out and, moreover, that after numerous efforts were made to locate this material it has never yet been found. Assuming that the collection mentioned by Dr. Perkins was made, it is a very great pity that it has been lost, as I understand that some of the birds from which lice were collected are now almost, if not entirely, extinct. Maybe they will be found one day.

The check-list of the Mallophaga is divided into two parts. The first part deals with the lice recorded from domestic animals, the second with the lice of wild birds. Collections of lice from domestic animals would greatly increase the first list, which at present contains a very poor representation of both parasites and localities.

In dealing with the Mallophaga I have endeavoured to give correct synonymy, some of which is new, and also to place species in their correct genera. I am fully aware that such papers as the present one do little to increase our knowledge of the systematics of the group in question, but at the same time I do feel that it is a convenient opportunity of bringing to light references to species which may be overlooked, etc. It is to be hoped, however, that this paper may have the desired effect, and that is to make a strong appeal to those in a position to collect conscientiously the Mallophaga of the birds of the Pacific Islands.

In the case of the Mallophaga of birds of the Hawaiian Islands I have only given the references to Kellogg and Chapman's earlier paper published in 1902.

The host-list is also divided into two parts. The first part contains only those birds recorded from islands outside the Galapagos group, the second is concerned exclusively with the Galapagos avifauna. In almost every case I have brought the host names up to date with the aid of Mathews' '*Systema Avium Australasia-narum*' and Swarth's '*The Avifauna of the Galapagos Is.*'* In the first host-list I have omitted any obvious cases of straggling. In the second part I have, perhaps somewhat rashly, endeavoured to give a corrected host-list of the parasites. It would be quite useless to repeat Kellogg's host-lists, since they contain so many obvious records of stragglers. Under each parasite, in the earlier

* *Occ. Pap. Calif. Acad. Sci.*, 1931, XVIII, pp. 1-299.

part of the paper I have suggested the probable true hosts of each parasite and the host-list is made up for the most part from my suggestions. There are cases where I have refrained from expressing any opinion as to the host. In the case of the *Geospiza* spp., *Nesomimus* spp., *Cactospiza* spp., *Certhidea* spp., etc., it is at present almost impossible to say which are their true parasites, so I have listed nearly all the lice recorded from them. A few of the birds from which Kellogg and his associates recorded Mallophaga have created some difficulty in their interpretation. I am not prepared to say what they meant by *Fregata aquila*, for instance, so I have merely interpreted it as *Fregata* sp. A number of parasites are recorded from *Anas versicolor*. According to Swarth (1931) there is only a single record of the capture of this bird on the islands, and even that is open to doubt. The bird is an Argentine species. Only two species of Anatidae are listed as occurring in the Galapagos Is., *Querquedula discors* (Linn.) and *Paecilometopon galapagensis* Ridgway. The former species is listed on the basis of a single specimen. It seems, therefore, probable that Kellogg's records from *Anas versicolor* really refer to *Paecilometopon galapagensis* Ridgway, which has been recorded on numerous occasions from all the islands except Narborough. There are records of Mallophaga from *Speotyto* sp. and *Corvus* sp., but I can find no reference to any such birds from the Galapagos Is.

SPECIES PARASITIC ON DOMESTIC ANIMALS.

1. *Menopon gallinae* (Linn.).

Pediculus gallinae Linn., 1758, Syst. Nat., p. 613.

P. trigonocephalus v. Olfers, 1816, De vegetativis et animatis corporibus in corporibus animatis reperiundis commentarius, Berlin, Pt. I, p. 90.

Menopon pallidum Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 440.

M. gallinae (Linn.), Ferris, 1924, Parasitology, XVI, p. 57, f. 1.

This is a common parasite of the domestic fowl, which is its true host. Jepson (1911, Rept. Econ. Entom., Dept. Agric. Fiji, Council Paper 25, p. 30) recorded it on fowls in Fiji. Buxton (1928, Researches in Polynesia and Melanesia, London, p. 54) and Waterston (1928, Insects of Samoa, Pt. VII, fasc. 3, p. 83) recorded it from domestic fowls at Apia, Samoa. Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 41) recorded it from turkey and guinea-hen at Honolulu and from chicken at Waipio and Honolulu.

2. *Menopon phaeostomum* Nitzsch.

Menopon phaeostomum Nitzsch in Giebel, 1866, Z. ges. Naturw. XXVIII, p. 391.

The true host of this species is the peacock. Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 41) recorded it from a guinea-hen at Honolulu.

3. *Eomenacanthus stramineus* (Nitzsch).

Menopon stramineum Nitzsch in Giebel, 1874, Insecta Epizoa, p. 291.

M. biserialatum Piaget, 1880, Les Pédiculines, p. 469, Pl. 37, f. 2.

Eomenacanthus biserialatus (Piaget), Uchida, 1926, J. Coll. Agric., Tokyo, IX, p. 30.

This common parasite occurs on both chicken and turkeys. Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 41) recorded it from chicken at Honolulu.

4. *Trichodectes canis* (De Geer).

Ricinus canis De Geer, 1778, Mémoires pour servir à l'histoire des Insectes, Stockholm, VII, p. 81, Pl. 4, f. 16.

Trichodectes latus Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 436.

This species is the true parasite of domestic dogs. Swezey (1931, Proc. Hawaiian ent. Soc., VII, p. 361) recorded it from a dog in Honolulu.

5. *Bovicola* spp.

There has been so much confusion regarding the lice of goats that it would be unsafe to say which species as at present recognised are referred to by past records. The *Trichodectes* spp. occurring on goats are now placed in the genus *Bovicola*.

Jepson (1911, Rept. Econ. Entom., Dept. Agric., Fiji, Council Paper 25, p. 30) recorded *Trichodectes climax* Nitzsch from goats in Fiji. Johnston and Harrison (1912, Trans. N.Z. Inst., XLIV, p. 373) recorded *T. climax* Nitzsch from domestic goats on the Kermadec Is.

6. *Goniodes dissimilis* Nitzsch.

Goniodes dissimilis Nitzsch in Denny, 1842, Monographia Anoplurorum Britanniae, p. 162, Pl. 12, f. 4.

Another common parasite of domestic fowls. Jepson (1911, Rept. Econ. Entom., Dept. Agric., Fiji, Council Paper 25, p. 30) recorded it as common on fowls in Fiji. Buxton (1928, Researches in Polynesia and Melanesia, London, p. 54) and Waterston (1928,

Insects of Samoa, Pt. VII, fasc. 3, p. 83) recorded it from domestic fowls at Apia, Samoa.

7. *Goniodes meleagridis* (Linn.).

Pediculus meleagridis Linn., 1758, Syst. Nat., p. 613.

Goniodes styliifer Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 432.

This species is a common parasite of turkeys. Van Dene (1909, Ann. Rept. Hawaiian Agric. Exp. St., p. 36) recorded it from turkeys on the Island of Molokai, Hawaiian Is. Swezey (1922, Proc. Hawaiian ent. Soc., V, p. 37) recorded it from a turkey. Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 41) recorded it from chicken at Waipio, Hawaiian Is.

8. *Goniocotes gigas* Taschenberg.

Goniocotes gigas Taschenberg, 1879, Z. ges. Naturw. LII, p. 104, Pl. I, f. 10.

This large species seems to be a normal parasite of guinea-fowls but is frequently found on domestic fowls. Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 41) recorded it from chicken at Waipio, Hawaiian Is.

9. *Goniocotes hologaster* Nitzsch.

Goniocotes hologaster Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 431.

Another common parasite of chicken which is also found on guinea-fowls. Recorded by Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 41) from chicken and turkeys at Honolulu.

10. *Lipeurus caponis* (Linn.).

Pediculus caponis Linn., 1758, Syst. Nat., p. 614.

A parasite of domestic fowls. Buxton (1928, Researches in Polynesia and Melanesia, London, p. 54) and Waterston (1928, Insects of Samoa, Pt. VII, fasc. 3, p. 83) recorded it from domestic fowls at Apia, Samoa. Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 41) recorded it from chicken in Honolulu.

11. *Lipeurus gallipavonis* (Geoffroy).

Pediculus gallipavonis Geoffroy, 1762, Histoire abrégée des Insectes, Paris, II, Pt. 2, p. 600.

This species is a parasite of turkeys, and has been recorded from these hosts in Honolulu by Illingworth (1928, Proc. Hawaiian ent. Soc., VII, p. 41).

12. *Lipeurus heterographus* Nitzsch.

Lipeurus heterographus Nitzsch in Giebel, 1866, Z. ges. Naturw. XXVIII, p. 381.

Jepson (1911, Rept. Econ. Entom., Dept. Agric. Fiji, Council Paper 25, p. 30) recorded this common parasite of domestic fowls from Fiji.

ANALYSIS OF MALLOPHAGA RECORDED FROM DOMESTIC ANIMALS.

Name of parasite.	Names of Islands.			
	Hawaiian Is.	Fiji Is.	Samoa.	Kermadec Is.
<i>Menopon gallinae</i> (Linn.)	x	x	x	—
<i>M. phaeostomum</i> Nitzsch	x	—	—	—
<i>Eomenacanthus stramineus</i> (Nitzsch)	x	—	—	—
<i>Trichodectes canis</i> (De Geer)	x	—	—	—
<i>Bovicola</i> spp. (of Goats)	—	x	—	x
<i>Goniodes dissimilis</i> Nitzsch	—	x	x	—
<i>G. meleagridis</i> (Linn.)	x	—	—	—
<i>Goniocotes gigas</i> Taschenberg	x	—	—	—
<i>G. hologaster</i> Nitzsch	x	—	—	—
<i>Lipeurus caponis</i> (Linn.)	x	—	x	—
<i>L. gallipavonis</i> (Geoffroy)	x	—	—	—
<i>L. heterographus</i> Nitzsch	—	x	—	—

(To be continued)

SETODES LUSITANICA McL.: A CADDIS-FLY NEW TO BRITAIN.

BY THE REV. PROFESSOR L. W. GRENSTED, M.A., D.D., F.R.E.S.

On July 1st I took a single specimen of this species on one of the main concrete columns supporting the bridge over the Thames at Goring. During the following week I took six more specimens, and it is obvious that the species is there in some numbers. It is mainly to be found on and about the big willows on the island in the middle of the stream, and as these are very inaccessible it is not likely to suffer much from collectors. This species, described in 1884, and taken by Mr. M. E. Mosely in some numbers in France and Corsica, is new to the British list of Trichoptera.

May I take this opportunity of recording also the occurrence of *Stenophylax rotundipennis* Brauer, of which my son last year took six or seven specimens in the Oxford district. This should be looked out for by collectors in September along the Thames valley. It is one of the rarest European species, and there is hardly a definitely known locality for it. It would be interesting to know whether it has a wide distribution in the Thames valley. I can also add another locality for *Metalype fragilis* Pict., which occurred in large numbers last year at Bourton-on-the-Water, Gloucestershire.

32 Charlbury Road,
Oxford.

July 7th, 1938.

Setodes lusitanica McL. in Oxfordshire.—On July 9th I collected about half a dozen specimens of *Setodes lusitanica* McLach. (just added to the list of British Trichoptera by the Rev. L. W. Grensted, *vide antea*) resting on herbage by the side of the Thames near Dorchester, and also near the Shillingford Bridge. A second visit to the former locality during the evening of July 11th produced further odd specimens, until about 8 p.m., when the *Setodes* began to fly in swarms. Paired specimens could now be found resting, and the swarming was observed at the margin of the water, and over the edges of the bordering fields, for about a quarter of a mile down the river, and was probably taking place along a great portion of its length. Occasionally there were intervals of from fifteen to thirty minutes in the swarming, possibly due to changes in the weather conditions, but always the caddis-flies reappeared, until I left at about 10 p.m.—EDWARD W. AUBROOK, University Museum, Oxford: July 18th, 1938.

A Note on Irish Coleoptera.—The following paper contains a list of species that are rare and local in Ireland and in some cases are not recorded for the various counties. One, *Otiorhynchus fuscipes* Ol., is not recorded as Irish. This species is of especial interest as a very closely related form, *O. clavipes* Bonnd., was mentioned as an Irish beetle by Hogan in 1854 (Zool. XII, 1854, pp. 4195-4338), but was withdrawn by Johnson and Halbert in 1902 ('A List of the Beetles of Ireland,' Proc. R.I.A., 1902). Unless otherwise stated, I am responsible for the determination and the record, and I wish to thank Dr. K. G. Blair and Mr. B. S. Williams for naming certain species, and Messrs. Stelfox, Phillips, Faris and Stanbridge for specimens and records.

Dyschirius impunctipennis Daws., Rosbeg, Co. Donegal, vi.1938; *Amara praetermissa* Sahlb., Ballyliffan, Co. Donegal, R. C. Faris, viii.1933; *A. similata* Gyll., Deputy's Pass, Co. Wicklow, A. W. Stelfox, ix.1932; *Agonum obscurum* Hbst., Graiguenamanagh, Co. Kilkenny, iv.1933, R. A. Phillips; *Cillenus lateralis* Sam., Rosbeg, Co. Donegal, vi.1938, and Howth, Co. Dublin, v.1938; *Trechus micros* Herbst., Ballinamintra, Co. Waterford, A.W.S., viii.1928; *Oxyptoda vittata* Mark., Castlegal Wood, Co. Sligo, A.W.S., x.1937, det. by Dr. Blair; *O. haemorrhoea* Mann., Kilbarrack, Co. Dublin, iv.1928, det. by B. S. Williams; *Phloeopora testacea* Mann., Clontarf, Co. Dublin; *Myrmecopora sulcata* Kies., Cartron, Blacksod Bay, Co. Mayo, vii.1933; *Falagria thoracica* Curt., Cahore, Co. Wexford, viii.1930; *Diglossa mersa* Hal., Rosbeg, Co. Donegal, vi.1938; *Autalia impressa* Ol., Cartron district, Co. Mayo, vi.1933; *Hygromoma dimidiata* Grav., Enniskerry, Co. Wicklow, A.W.S., v.1934; *Oligota punctulata* Heer, Clontarf, Co. Dublin; *Quedius auricomus* Kies., Altidore, Co. Wicklow, A.W.S., 1924; *Ontholestes tessellatus* Fourc., Clontarf and Dollymount, Co. Dublin, vi.1938; *Philonthus puella* Nord., Cornaher lough, Co. Westmeath, vii.1933; *Leptacinus batychnus* Gyll., Raheny, Co. Dublin, vii.1933; *Acidota crenata* F., Annacoona, Co. Sligo, A.W.S., x.1937; *Olophrum fuscum* Grav., Colbinstown, Co. Wicklow, A.W.S., ii.1934; *Silpha tristis* Ill., Mullet, Co. Mayo, A.W.S., vi.1936; *Stenichnus poweri* Fowler, Greystones, Co. Wicklow, G. R. Stainbridge, v.1938; *Antherophagus pallens* Fab., Bushfoot, Co. Antrim, A.W.S., vi.1938; *Cryptophagus setulosus* Sturm, Clontarf, vii.1935, det. by Dr. Blair; *C. affinis* Sturm, Clontarf, 1933; *Lathridius bergrothi* Reitt., Dalkey, Co. Dublin, xi.1930 (Nat. Mus. per S. W. Kingston, Esq.); *Ptilinus pectinicornis* L., Ema Park, Leix, A.W.S., vi.1938; *Octotemnus glabriculus* Gyll., Portmarnock, Co. Dublin, 1932; *Pogonochaerus hispidus* L., Powerscourt, Co. Wicklow, bred from birch branches, 1937; *Larix atomaria* L., Wexford, G.R.S., 1937; *Longitarsus holsatica* L., Ballinahinch, Co. Galway,

A.W.S., ix.1928; *I. atriceps* Kuts., Kilbarrack, Co. Dublin, iv.1927, det. by Mr. Donisthorpe; *Haltica palustris* Weise, Glendalough and Clara, Co. Wicklow, A.W.S., vi.1937 — v.1928; *Phyllotreta atra* Payk., Kilkenny, A.W.S., iv.1936; *P. sinuata* Steph., Dunran, Co. Meath, A.W.S., v.1937; *Apteropoda orbiculata* Marsh., Dunran, A.W.S.; *Psylliodes picina* Marsh., Newbridge, Co. Kildare, 1935; *Salpingus ater* Gyll., Curragh, Co. Kildare, A.W.S., vi.1938; *Sphaeriestes gabrieli* Gerh., Massereene Park, Co. Antrim, ix.1936; *Rhynchites germanicus* Herbst., Cushenstown, Co. Wexford, A.W.S., v.1932; *Apion subulatum* Kirby, Abbeyleix, Leix, R.A.P., v.1926; *A. cruentatum* Walt., Ellystrand, Blacksod Bay, Co. Mayo, ix.1933; *A. rufirostre* F., Kilbarrack, Co. Dublin, 1936; *A. aethiops* Herbst., Baldoyle, Co. Dublin, v.1936; *A. radiolus* Kirby, Baldoyle, vi.1928, both the last species were taken on mallows; *Otiorrhynchus fuscipes* Ol., Bushfoot, Co. Antrim, A.W.S., vi.1938, only one specimen taken, an addition to the Irish list; *O. rugosostriatus* Goeze, Leixlip, Co. Kildare, iv.1930, Kilkenny, R.A.P., v.1926; *Orchestes saliceti* Payk., Brittas, Co. Dublin, A.W.S., vi.1926; *Notaris scirpi* F., Mountmellick, Leix, R.A.P., x.1926; *Ceuthorrhynchus quadridens* Panz., Stralinchey, Co. Donegal, vi.1928; *C. rugulosus* Herbst., Howth, Co. Dublin, v.1937; *C. floralis* Payk., Kilbarrack, Co. Dublin, common on cress about June; *Rhinonchus perpendicularis* Reich., Clontarf, Co. Dublin; *Limnobaris pilistriata* Setph., near Castleforbes, Co. Longford, A.W.S., vii.1933; *Mesites tardyi* Curt., Strabane, Co. Tyrone, vi.1938; *Hylastes ater* Payk., Newtownmountkennedy, Co. Wicklow; *Dryocetes villosus* F., Kilruddery, Co. Wicklow, A. C. Forbes, iv.1938. — EUGENE O'MHONY, Natural History division, National Museum of Ireland: July 12th, 1938.

CORRECTIONS AND ADDITIONS TO JAMES EDWARDS' CATALOGUE OF BRITISH HEMIPTERA-HOMOPTERA, PERTH, 1908 (EXCLUDING PSYLLIDAE).*

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A great deal of work has been done in the past few years on the European Homoptera. Although we cannot entirely agree with the new classification of Haupt (Zool. Jahrb. LVIII, pp. 173-286, 1929) which is followed in his Homoptera of 'Die Tierwelt Mitteleuropas (IV, 3, Insekt. 1), 1935, nor with some of his generic names, which in our opinion are based on invalidly fixed genotypes,¹ we cannot ignore a number of changes which will seriously affect the nomenclature of our own fauna. Meanwhile Ribaut in France has published an extensive revision of the French Typhlocybidae which will involve considerable changes in our own Typhlocybid list and necessitates a complete revision of the British species. At the same time Wagner in Germany, Nast in Poland, Ossian-

* My colleague Mr. F. Laing is in charge of this group.

¹ Haupt has, also, in many cases, resurrected apparently older specific names from synonymy forgetting that these names were preoccupied in the original genus and cannot therefore be used; for example *Oncopsis* (*Bythoscopus* Haupt) *fenestratus* Schrk. 1776 is preoccupied in the original genus *Cicada* by *fenestratus* F. 1775 and the name *alni* Schrk. should therefore be used.

nilsson in Sweden, Zachvatkin in Russia and Paoli in Italy have been doing work which affects the British fauna. Finally the American homopterists have been particularly active, and some of their work will also cause alterations in our British names. The result of all this has been to reduce the once apparently well-ordered British Homoptera to a state of chaos. The most recent comprehensive check list is that of James Edwards, published at Perth by Milne, Tannahill and Methuen in August, 1908. Since this appeared, some seventy additional species have been recorded. I have been engaged for some time on the preparation of an up-to-date list, but it is useless to follow passively the nomenclatorial changes proposed by Continental workers. All these changes have first to be investigated. Each genus must be taken in turn and its name validly fixed according to the International Rules of Nomenclature. It will obviously take some time to bring order into this confusion, but in the meantime it has been thought advisable to publish a tentative list of alterations and additions to the Perth list, so that British workers can correct their copies accordingly. It should be remembered that some of these names will be changed later. Through the kind co-operation of Mr. H. W. Daltry and Mr. P. Harwood I have been able to add to this list three recent new records, *Macrosteles salina* Reuter, *Erythroneura ribauti* Oss. and *Megamelus paludicola* Linn. These three species, together with the other additions included here, will be described in this journal later. In order to save space, the correct name is given first with the former 1908 name in parenthesis. Where no alterations are at present contemplated, the family, genus or species has been omitted. Species numbers are given for convenience in correcting and to assist in distinguishing generic from specific names. Additions have been given the number of the species to which they are most closely allied or of the last species in the genus, together with an appropriate letter, and are followed by the reference to their original record as British. The reference has also been given to the original record of all species in the list added since Edwards' Hemiptera-Homoptera of the British Islands, 1896. Those now published in a British journal for the first time are marked: New Record.

Family CERCOPIDAE.

Cercopis F. (= *Triecphora* Edw.).

454. *sanguinea* Geoff. (= *vulnerata* Edw.).

Aphrophora Germ.

455. *spumaria* L. (= *alni* Edw.).

456. *salicina* Goeze (= *salicis* Edw.).
 456A. *maculata* Edw. Ent. Mon. Mag., 1920, p. 53.
 456B. *major* Uhler (= *myricae* Edw.² Ent. Mon. Mag., 1926, p. 52).
Philaenus Stål.
 457. *leucophthalmus* L. (= *spumarius* Edw.).
Neophilaenus Haupt (= *Philaenus* Edw. part).
 458. *campestris* Fall.
 459. *exclamationis* Thunb.
 460. *lineatus* L.

Family PAROPHIDAE.

Megophthalmus Curt

- 465A. *scabripennis* Edw. Ent. Mon. Mag., 1915, p. 206.

Family CICADELLIDAE.

Cicadella Latr. (= *Tettigonia* Edw.).

467. *viridis* L.
Graphocephala Van Duzee. Ent. Mon. Mag., 1935, p. 277.
 467A. *coccinea* Forst. Ent. Mon. Mag., 1935, p. 277.

Family BYTHOSCOPIIDAE.

Batracomorphus Lewis.

470. *irroratus* Lewis (= *microcephala* Edw.).
Bythoscopus Germ. (*Batracomorphus* Edw. part).
 471. *lanio* L.

Oncopsis Burm.

- 474A. *carpinicola* Edw. Ent. Mon. Mag., 1920, p. 54.
 474B. *avellanae* Edw. Ent. Mon. Mag., 1920, p. 54.
Macropsis Lewis.

478. *rubi* Boh. Ent. Mon. Mag., 1908, p. 56.
 486A. *decoratus* Edw. Ent. Mon. Mag., 1919, p. 55.
 486B. *populi* Edw. Ent. Mon. Mag., 1919, p. 56.
 486C. *scotti* Edw. Ent. Mon. Mag., 1920, p. 55.
Idiocerus Lewis.
 487. *decimaquartus* Schrk. (= *scurra* Edw. Ent. Mon. Mag., 1907, p. 245).
 488. *stigmatalis* Lewis (= *adustus* Edw.).
 493. *socialis* Fieb. (= *cupreus* Edw.).
 494. *elegans* Flor. ♀ variety (= *viduatus* Edw. Trans. Ent. Soc. Lond., 1886, p. 118).
 505A. *albicans* Kbm. var. *fuscoceruleus* Edw. Ent. Mon. Mag., 1915, p. 206.
 505B. *rutilans* Kbm. Ent. Mon. Mag., 1909, p. 21.

Agallia Curtis.

507. *consobrina* Curtis (= *puncticeps* Edw.).
 509A. *aspera* Ribaut. Bull. Soc. Hist. Nat. Toulouse, 67, p. 36, 1935. **New record.**
 509B. *laevis* Ribaut. Bull. Soc. Hist. Nat. Toulouse, 67, p. 35, 1935. **New record.**

Family EUSCELIDAE.

Aphrodes Curtis (= *Acocephalus* Edw.).

510. *bicinctus* Schrk. (= *nervosus* Edw.).
 510A. *bicinctus* Schrk. var. *obtusifrons* Kbm. **New record.**

² (= *alpina* Mel.)

511. *bicinctus* Schrk. subsp. *aestuarinus* Edw. Ent. Mon. Mag., 1908, p. 57.
 512A. *trifasciatus* Geoff. Ent. Mon. Mag., 1915, p. 206.
 515. *limicola* Edw. Ent. Mon. Mag., 1908, p. 57.
 518. *flavostrigatus* Don (= *flavostrigatus* Edw. typ. err.).
 518A. *albiger* Germ. var. *kirschbaumi* Edw. Ent. Mon. Mag., 1920, p. 55.
Strongylocephalus Flor.
 520. *megelei* Scott (= *megelei* Edw. typ. err.).
Eupelix Germ.
 522. *depressa* F. Ent. Mon. Mag., 1908, p. 58, and 1919, p. 105.
 523. *producta* Germ. loc. cit.
Doratura J. Sahlb.
 527. *impudica* Horv. Ent. Mon. Mag., 1908, p. 58.
Paralimnys Mats. (= *Paramesus* Edw. part). Ent. Mon. Mag., 1922, p. 207.
 529. *phragmitis* Boh.
Stictocoris Thoms.
 532. *flaveola* Boh. Ent. Mon. Mag., 1902, p. 5.
Euscelis Brullé (= *Athysanus* Edw.).
 538. *variegatus* Kbm. Ent. Mon. Mag., 1908, p. 58.
 539. *schenki* Kbm. loc. cit.
 542. *sejungendus* Kbm. Ent. Mon. Mag., 1908, p. 59.
 542A. *distinguendus* Kbm. Ent. Mon. Mag., 1920, p. 56.
 542B. *bensoni* China. Ent. Mon. Mag., 1933, p. 106.
Hardya Edwards (*Athysanus* Edw. part). Ent. Mon. Mag., 1922, p. 206.
 544. *melanopsis* Hdy.
Scaphoideus Uhler (= *Deltocephalus* Edw. part). Ent. Mon. Mag., 1922, p. 207.
 545. *formosus* Boh. forma *steini* Fieb. Ent. Mon. Mag., 1908, p. 59.
Recilia Edw. (= *Deltocephalus* Edw. part). Ent. Mon. Mag., 1922, p. 206.
 547. *coronifer* Marsh (= 569 *coroniceps* Kbm.).
Deltocephalus Burm.³
 554. *parallelus* Fieb. (= *falleni* Edw.) (= *sursumflexus* Then. Ent. Mon. Mag., 1915, p. 207).
 564. = 565.
 565. *pascuellus* Fäll. (= *minki* Edw.).
 572A. *xanthoneurus* Fieb. Ent. Mon. Mag., 1925, p. 60.
 572B. *multinotatus* Boh. Ent. Mon. Mag., 1915, p. 207.
 572C. *halophilus* Edw. Ent. Mon. Mag., 1924, p. 53.
 572D. *confinis* Dahlb. (= *thenii* Edw. Ent. Mon. Mag., 1915, p. 208).
Jassargus Zachvatkin (= *Deltocephalus* Edw. part). Mem. Soc. Ent. Ital. XII, 1934, p. 268.
 548. (= 553).
 553. *distinguendus* Flor. (= *repletus* Edw. nec Fieb.) (= *paleaceus* J. Sahlb.).
 555. (= 553).
Ribautiellus Zachvatkin (= *Deltocephalus* Edw. part). Mem. Soc. Ent. Ital. XII, 1934, p. 268.
 556. *cephalotes* (H.S.) Then.
 557. (= *striatus* L. var. *sabulicola* Curt.).

³ Some of the species now included in *Deltocephalus* will eventually be allocated to *Jassargus* and *Ribautiellus*.

558. *striatus* L.
 558A. *thenii* Edw. Ent. Mon. Mag., 1915, p. 208.
Allygus Fieb. (= *Jassus* Edw.).
Ophiola Edw. (= *Thamnotettix* Edw. part). Ent. Mon. Mag., 1922, p. 206.
 579. *striatulus* Fall.
 580. *striatulellus* Edw.
 580A. *corniculatus* Marsh. Ent. Mon. Mag., 1929, p. 227
Mocydia Edw. (= *Thamnotettix* Edw. part). Ent. Mon. Mag., 1922, p. 206.
 584. *croceus* H.S.
 585. *attenuatus* Germ.
Opsius Fieb. (= *Limotettix* Edw. part). Ent. Mon. Mag., 1922, p. 206.
 586. *stactogalus* Fieb. (= *tamaricis* Kbm.⁴). Ent. Mon. Mag., 1902, p. 215.
Limotettix J. Sahlb. (= *Drylx* Edw. Ent. Mon. Mag., 1922, p. 206).
 587. *striola* Fall.
 587A. *atricapilla* Boh. Ent. Mon. Mag., 1915, p. 208.
Cicadula Zett. (= *Limotettix* Edw.).
 589. *intermedius* Boh. (= *lunulifrons* J. Sahlb.). Ent. Mon. Mag., 1924, p. 54.
 590. *5-notata* Boh. Ent. Mon. Mag., 1915, p. 209.
 594A. *persimilis* Edw. Ent. Mon. Mag., 1920, p. 57.
 594B. *saturata* Edw. Ent. Mon. Mag., 1915, p. 208.
Grypotes Fieb. (Ent. Mon. Mag., 1914, pp. 9 & 10).
 594D. *pinctellus* Zett. Ent. Mon. Mag., 1914, p. 10.
Macrosteles Fieber (= *Cicadula* Edw.).
 601. *horvathi* Wagner (= *warioni* Edw.).
 604. *feberi* Edw. Ent. Mon. Mag., 27, p. 32, 1891.
 605A. *viridigrisea* Edw. Ent. Mon. Mag., 1924, p. 54.
 605B. *laevis* Ribaut. Ent. Mon. Mag., 1929, p. 228.
 605C. *salma* Reut. **New record.**
Sonronius Dorst (= *Cicadula* Edw. part). U.S. Dept. Agric., Misc. Pub. 271, p. 4, 1937.
 597. *dahlbomi* Zett.
Davisonia Dorst (= *Cicadula* Edw. part). U.S. Dept. Agric., Misc. Pub. 271, p. 4, 1937.
 600. *punctifrons* Fall.
Erotettix Haupt (= *Cicadula* Edw. part).
 606. *cyanae* Boh.

Family TYPHLOCYBIDAE.

- Alebra** Fieb.
 608A. *wahlbergi* Boh. (= *forma wahlbergi* Edw.).
Dikraneura Hardy (= *Erythria* Edw.).
 609. *aureola* Fall.
 611. *citrinella* Zett. (= *forcipata* Flor.).
 612. *similis* Edw. (= *feberi* Löw).
 614. = 662. *Erythroneura hyperici* H.S. ♂.
 615A. *lutcola* Fieber. Ent. Mon. Mag., 1908, p. 81.

⁴ Strictly speaking *stactogalus* is a *nomen nudum* and the species should be known by Kirschbaum's name *tamaricis* unless one regards Fieber's generic diagnosis of *Opsius* as validating the species.

Empoasca Walsh (= *Empoasca* and *Chlorita* Edw.).

617. *populi* Edw. Ent. Mon. Mag., 1908, p. 81. ^{*}
 618. *rufescens* Mel. var. *butleri* Edw. Ent. Mon. Mag., 1908, p. 82.
 619. *apicalis* Edw. Ent. Mon. Mag., 1908, p. 82. Doubtful record.
 620. *flavescens* F. (= *aurantiaca* Edw. Ent. Mon. Mag., 1914, p. 168) (= 621.
solani-tuberosa Edw. Ent. Mon. Mag., 1908, p. 82).
 621. = *flavescens* F.
 622. *decipiens* Paoli (= *viridula* Edw. nec Fall.).
 622A. *pteridis* Dahlb. (= *tullgreni* Ribaut = *viridula* Edw. part).

Eupteryx Curtis (= *Eurhadina* Haupt, 1929 ⁵).

- 625A. *cyclops* Mats. (= *britteni* Edw. Ent. Mon. Mag., 1924, p. 54; 1926, 53).
 625B. *thoulessi* Edw. Ent. Mon. Mag., 1926, p. 53.
 625C. *simplex* Edw. Ent. Mon. Mag., 1926, p. 53.
 637A. *loewi* Then. Ent. Mon. Mag., 1920, p. 196.
 637B. *stellulata* Burm. Ent. Mon. Mag., 1920, p. 197.

Typhlocyba Germ. (= *Edwardsiana* Jazykov, 1929 ⁶) (= *Anomia* Edw., 1928).

639. *sexpunctata* Fall. ⁷ (= *sexmaculata* Hardy).
 639A. *10-punctata* Fall. (= *betulicola* Edw. Ent. Mon. Mag., 1925, p. 64).
 645. *inquinata* Ribaut (= *gratiosa* Edw. nec Boh.).
 647. *leithierryi* Edw. (= *hippocastani* Edw., 1896 et 1920 nec 1888).
 647A. *hippocastani* Edw., 1888 (distinct species fide Ribaut).
 650. *candidula* Kbm. Ent. Mon. Mag., 1900, p. 280, and 1908, p. 87.
 655. *bifasciata* Boh. (= *nitidula* Edw. et Fab., 1794, nec Fab., 1787).
 657. *cruenta* H.S. Ent. Mon. Mag., 1900, p. 279.
 657A. *fratercula* Edw. Ent. Mon. Mag., 1908, p. 84.
 657B. *frustrator* Edw. Ent. Mon. Mag., 1908, p. 84.
 657C. *bidentata* Edw. Ent. Mon. Mag., 1914, p. 170.
 657D. *carri* Edw. Ent. Mon. Mag., 1914, p. 170.
 657F. *diversa* Edw. Ent. Mon. Mag., 1914, p. 171.
 657G. *plebeja* Edw. Ent. Mon. Mag., 1914, p. 169.
 657H. *prunicola* Edw. Ent. Mon. Mag., 1914, p. 168.
 657I. *tersa* Edw. Ent. Mon. Mag., 1914, p. 169.
 657J. *callosa* Then. Ent. Mon. Mag., 1915, p. 209. var. *distincta* Edw. Ent. Mon. Mag., 1914, p. 170 (fide Ribaut).
 657K. *alnicola* Edw. Ent. Mon. Mag., 1924, p. 54.
 657L. *bergmani* Tullgren. Ent. Mon. Mag., 1924, p. 55.
 657M. *nigriloba* Edw. Ent. Mon. Mag., 1924, p. 55.
 657N. *spinigera* Edw. Ent. Mon. Mag., 1924, p. 55.
 657O. *complicata* Edw. Ent. Mon. Mag., 1928, p. 80.
 657P. *tridentata* Edw. Ent. Mon. Mag., 1928, p. 80.
 657Q. *staminata* Ribaut. Bull. Soc. Hist. Nat. Toulouse LXI, pt. 3, p. 334, 1931. New record. As form of 651, Edwards, Ent. Mon. Mag., 1928, p. 83.

⁵ Neither McAtee nor Ribaut recognise this genus although Ossiannilsson and Wagner do so. It includes Nos. 635-637b. The genitalia of these species are by no means uniform in type.

⁶ Rev. Russe d'Ent. XXXIII, 1929, pp. 262-265; type *T. rosae* L. This genus is based on genitalic characters and is not recognised either by McAtee or Ribaut. The type of *Typhlocyba* Germ. is *quercus* F., which certainly has a different facies from *T. rosae* L.

⁷ Referred by Haupt to *Eupteryx*.

- Erythroneura** Fitch (= *Zygina* Edw. and *Zyginidia* ⁸ Haupt, 1929).
 662. (=614 *Dikraneura pygmaea* Douglas).
 663. *parvula* Boh. (= *disjuncta* Ribaut).
 664A. *angusta* Leth. (= *neglecta* Edw. Ent. Mon. Mag., 1914, p. 171), var.
 rubrinervis Edw. loc. cit.
 664B. *mali* Edw. Ent. Mon. Mag., 1915, p. 209.
 664C. *pallidifrons* Edw. Ent. Mon. Mag., 1924, p. 57.
 664D. *thamni* Ferr. var. *suavis* Rey (= *concinna* Edw. Ent. Mon. Mag., 1924,
 p. 56).
 664E. *pruni* Edw. Ent. Mon. Mag., 1924, p. 56).
 664F. *thamnicola* Horv. (= *thamni* Edw. Ent. Mon. Mag., 1924, p. 56).
 664G. *umbrata* Mel. Ent. Mon. Mag., 1924, p. 56.
 664H. *ribauti* Ossiannilsson (= *parvula* Ribaut nec Boh.). **New record.**
 664I. *ordinaria* Ribaut. Faun. France 31, Homop. Auch. I, Typhl., 1936,
 pp. 47—48. **New record.**

Family CIXIIDAE.

Cixius Latr.

673. *scotti* Edw. (= *simplex* Edw. nec H.S. Ent. Mon. Mag., 1920, p. 58).
 674A. *cambricus* China. Ent. Mon. Mag., 1935, p. 38.

Family DELPHACIDAE.

Megamelus Fieb.

682. *venosus* Germ. (= *thoulessi* Edw.).
 682A. *paludicola* L. (= *brevifrons* Haupt, 1935, nec Reut. 1880). **New record.**

Chloriona Fieb.

693. *glaucescens* Fieb. Ent. Mon. Mag., 1898, p. 59.
 694. *prasinula* Fieb., loc. cit.
 695A. *dorsata* Edw. Ent. Mon. Mag., 1910, p. 13.

Euconomelus Haupt (= *Conomelus* Edw. part).

699. *lepidus* Boh.

Delphacodes Fieber (= *Delphax* and *Liburnia* Edw.).

700. *pallens* Stål (= *collina* Edw.).
 703. = 709. *alhocarinata* Stål.
 705. = 706. *adela* Flor.
 706. *adela* Flor (= *signoreti* Edw.).
 709. *alhocarinata* Stål (= *similis* Edw. = 703 *distincta* Edw.).
 718. = 721. *obscura* Boh.
 721. *obscura* Boh. (= *difficilis* Edw.).
 725. Transferred to *Megamelus* = 682.
 728. *marginata* F. (= *striatella* Edw.).

⁸ This genus, which is not recognised by Ribaut or McAtee, includes *scutellaris* H.S. and *parvula* Boh.

NOTE ON THE INSECT FAUNA OF THE BROMELIAD, *BROCCHINIA*
MICRANTHA (BAKER) MEZ,* OF BRITISH GUIANA.

BY JOHN SMART, PH.D.

Department of Entomology, British Museum (Natural History).

PLATES I, II.

While on a collecting expedition to the neighbourhood of the Kaieteur Fall on the Potaro River in British Guiana during the summer of 1937, the opportunity was taken to make a somewhat rough examination of the insect fauna living in the water collected in the leaves of the large terrestrial 'tank' Bromeliad, *Brocchinia micrantha* (Baker) Mez, found there. The plants were examined during the first fortnight of September, i.e. at the beginning of the dry season.

Such knowledge as is available of the distribution of the plant indicates that it is endemic to the area in which it was examined. The plants are to be found on the ledges of the sandstone cliffs of the Gorge of the Potaro, in the unforested part of the bottom of the Gorge near the foot of the Fall, and on the small Savannah on the western bank of the Potaro at the top of the Fall. These Bromeliads are one of the most striking features of the Savannah, the general features of which have been described by Jenman (1882) (Plate II).

As in other 'tank' Bromeliads, water gathers in the bases of the leaves and in the central cone of leaves round the growing point. This fluid contains insects and other living organisms, and collections of these were made with particular reference to the insects.

Plate I shows one of the Bromeliads cut in vertical section. A specimen such as this one contained about one gallon of water and is what is referred to in the table as a medium-sized plant. The fluid from twelve plants was examined, and the sizes of the plants may be gauged from their fluid content.

'Baby' size contained 1 pint approx.

Small size „ 3 quarts

Medium size „ 1 gallon

Large size „ 4 gallons

Extra large size „ 5 gallons

The fauna was mainly concentrated in the water enclosed by the living leaves, and in the larger plants a progressively larger amount of water was held in the bases of the old dead leaves. The fauna may be most simply recorded in tabular form.

* Frequently referred to in the literature by the synonym *Brocchinia cordylinoides* Baker.



MEDIUM SIZED *Brocchmia micrantha* (BAKER) MEZ CUT TO SHOW
VERTICAL SECTION. (Scale shown in inches.)



GENERAL VIEW OF *Brachmia micrantha* (BATE) MEZ GROWING ON THE KUFTEUR SAVANNAH.

*Brocchinia
micrantha* (Baker)
Mez.

Fauna.

No.	Size.	Larger frog (<i>Hyla</i> sp.) (probably a visitant).	Tadpoles (Spec. incert.).	Small frog (<i>Hyloxalus beebel</i> Noble).	Water beetles (2 spp. <i>Dytiscidae</i>)*	Beetle larvae (<i>Helotidae</i>).	Dragonfly larvae (<i>Zygoptera</i>).	Dragonfly larvae (<i>Anisoptera</i>).	Cockroach (<i>Epilampra</i> sp.).	Rat-tailed maggot (<i>Eristalis</i> sp.).	<i>Ceratopogonid</i> larvae.	<i>Chironomid</i> larvae.	<i>Aedes</i> larvae.	<i>Culex</i> larvae.
1.	'Baby'	—	—	—	—	—	—	—	—	—	—	1	—	—
2.	'Baby'	—	—	—	—	—	—	—	—	—	1	1	—	1
3.	Small	—	—	—	—	—	—	—	1	2	—	2	—	1
4.	Medium	—	—	—	—	2	—	—	—	—	—	1	1	1
5.	Medium	—	—	—	1	—	—	1	—	—	1	1	1	—
6.	Medium	—	—	—	1	—	1	—	—	—	—	2	1	—
7.	Medium	—	—	—	1	1	—	2	—	—	1	1	1	—
8.	Medium	—	—	—	—	—	1	2	—	—	—	2	1	—
9.	Medium	—	—	—	1	—	—	—	—	1	1	1	1	—
10.	Medium	—	2	—	—	1	—	2	1	2	—	3	1	1
11.	Large	—	6	—	12	42	—	—	—	—	1	2	—	1
12.	Extra large .	—	8	2	2	1	—	4	—	1	1	2	1	1
From other plants		1	x	—	—	—	x	x	1	—	x	x	x	x

Numbers represent individuals of each category taken.

Numbers represent the number of species taken.

A large ostracod crustacean was present in some of the plants, and Mr. Ross, of the Department of Botany, B.M. (N.H.), who has examined samples of the microflora from the water of the Bromeliads, reports the occurrence of species of filamentous blue-green algae, species of colonial blue-green algae, species of diatoms and species of desmids. The microfauna was not examined.

The figures given in the table cannot be treated statistically or graphically owing to the rough methods by which the samples were obtained, but nevertheless certain general trends in the nature and changes of the fauna of the Bromeliads can be seen from them.

The earliest stage of the fauna recorded is from the 'baby' size plants. These plants were about a foot high but their exact age is not known. It will be seen from the table that the fauna in them consisted exclusively of truly aquatic larvae, which probably all subsisted entirely on the algae in the water. In this size of plant almost all the water is contained by the bases of living leaves and

* *Copelatus fulvipes* Balfour-Browne and *Copelatus cordylinoides* Balfour-Browne.

its volume is small, and in consequence a small, simple fauna that balances against the algal flora is all that can be supported.

With an increase in size larger carnivorous and saprophagous organisms begin to appear. It will be seen from the table that the fauna of the medium-sized plants is just as varied as that of the larger plants, except for the occurrence of adult frogs in the latter, but it may be mentioned that similar frogs were seen in medium-sized plants other than those whose entire fauna was recorded. It is apparent, therefore, that up to what may be termed medium size the increase in the size of the Bromeliad leads to an increase in the variety of the fauna, but that beyond a certain point increase in size of the plant merely results in an increase in the number of individuals of the fauna that can be supported in the fluid contents of the Bromeliad.

REFERENCES.

- BALFOUR-BROWNE, J. (1938). Ent. Mon. Mag., **74**, pp. 100—102.
JENMAN, G. S. (1882). Timehri, **1**, pp. 228—250.

A PLAGUE OF THE BEETLE *HARPAIUS RUFIPES* DEGEER.

BY R. J. WHITNEY.

(Zoology Department, University of Birmingham).

Mr. E. B. Britton, of the British Museum (Natural History), has suggested that some observations on an infestation of adult individuals of *Harpalus rufipes*, Degeer (*H. ruficornis*, F.), should be placed on record. The pest was first reported in June, 1938, by a householder on a new housing estate near Welshman's Hill, Sutton Coldfield, just north of Birmingham. The estate was previously part of a farm and had been planted with potatoes. The soil is very sandy, and such open ground as remains is now covered with a coarse tufty grass.

Enquiries were made at about a dozen houses of the estate in Banners Gate Road and Rough Road. Some of the householders appeared not to have noticed any beetles, while others were much troubled with them; one of the latter had used Keating's Powder and pyrethrum powder and swept up about 300 specimens in a single night. The beetles appeared to be doing little material damage. They were reported to be active chiefly during the night, when they were seen emerging from airbricks and from holes in the soft mortar below the damp course, and even entering the houses and climbing the walls. During the daytime the beetles were not much in evidence, although I found a few under moist pieces of wood, etc., lying on the ground.

The cause of the plague is at present unknown. No larvae have been found or spoken of in the neighbourhood, but the farmer of the land says that the site of the houses was heavily infested with 'wireworms' when he had potatoes there. These may have been *Harpalus* larvae, or the *Harpalus* may have been feeding on genuine wireworms. The plant-cover in the neighbourhood is poor and, so far as can be ascertained, there are no strawberries (*H. rufipes* has been reported as a pest of strawberry plants). There is a small disused domestic refuse-dump some hundreds of yards away near the Banners Gate entrance of Sutton Park. Only a few *Harpalus* could be found near this. I am told by the builder of the housing estate that beetles were noticed by workmen during the summer of 1937. Beetles were then found in large numbers in trenches which had been left open overnight. I have been unable to find out whether or not these were *H. rufipes*.

The beetles have evidently become conspicuous because, owing to the disturbance of their normal food supply, they now collect near the houses from the barren fields. How far this is related to the recent discontinuance of potato crops in the vicinity, it is not possible to say.

Department of Zoology,
The University, Edgbaston,
Birmingham, 15.
August 5th, 1938.

NEOPHILAENUS LONGICEPS Put., AN ADDITION TO THE
BRITISH LIST OF HEMIPTERA-HOMOPTERA.

BY B. S. WILLIAMS.

On July 21st last, while sweeping on the saltings at Benfleet with Mr. D. C. Thomas, I caught a Homopteron, the facies of which appeared unfamiliar. Unfortunately at the time of capture I was about to leave to catch my train and there was no opportunity to try for more.

The specimen, a ♀, was submitted to Mr. W. E. China, who with his customary kindness examined it and identified it as *Neophilaenus longiceps* Put.

Mr. China in litt. says, 'Your female *Philaenus* sp. from Benfleet appears to be *longiceps* Put., a species previously only recorded from S. France, Algeria and Morocco.' Puton's description is quite short. Translated it runs: 'This species only differs from *P. lineatus* L. by the greater size and by the much longer and more pointed head with straight sides. Otherwise similar. Length 6½-7 mm.'

The characters given by Puton, though meagre are adequate and render this species easy of recognition.

The recorded distribution of this species, apart from the Benfleet specimen, is South European and North African, and it may be considered that the British example is an accidental importation, but from field observations it seems to me unlikely that a Cercopid can fly any great distance, and the fact that it was swept from salt mud-flats suggests that it may be one of the specialised estuarine fauna.

15 Kingcroft Road, Harpenden
August 11th, 1938.

THE MALLOPHAGA (BITING-LICE) RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

(Continued from p. 189.)

SPECIES PARASITIC ON 'WILD' BIRDS.

13. *Menopon albemarlei* Kellogg and Kuwana.

Menopon albemarlei Kellogg and Kuwana, 1902, Proc.
Wash. Acad. Sci., IV, p. 488, Pl. 31, f. 5.

Locality: Galapagos Is., Albemarle I.

Geospiza fuliginosa fuliginosa Gould.

Localities: Galapagos Is., Albemarle I.

14. *Menopon aurifasciatum* Kellogg.

Menopon aurifasciatum Kellogg, 1899, Occ. Pap. Calif. Acad.
Sci., VI, pp. 43-44, Pl. 4, f. 5.

M. aurifasciatum Kellogg, Ewing, 1924, Zoologica, N.Y., V,
p. 82.

Recorded host: *Fregata* sp. ? (*Fregata aquila*).

Localities: Galapagos Is.

15. *Menopon becki* Kellogg.

Menopon becki Kellogg, 1906, Trans. Amer. ent. Soc.,
XXXII, p. 322.

Recorded host: *Phaëthon aethereus* Linn.

Locality: Galapagos Is., Daphne I.

16. *Menopon cyrtostigmum* Kellogg and Chapman.*

* In the case of all species referred to in the paper on the Mallophaga from Hawaiian Birds by Kellogg and Chapman I have given only the earlier references to the paper published in the Journal of the New York Entomological Society and omitted the references to the same paper which appeared in the Fauna Hawaiensis.

Menopon cyrtostigmm Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, pp. 165-166, Pl. 15, f. 3.

Recorded host: *Vestiaria coccinea* (Forster).

Localities: Hawaiian Is., Hilo, Maui I.

17. *Menopon fuscofasciatum* Piaget.

Menopon fuscofasciatum Piaget, 1880, Les Pédiculines Leiden, p. 492, Pl. 40, f. 9.

M. fuscofasciatum Piaget, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 321.

Recorded hosts: *Phaëthon aethereus* Linn.; *Sula dactylatra granti* Rothschild; *Fregata* sp.; *Anous stolidus galapagensis* Sharpe.

Probable true host: *Anous stolidus galapagensis* Sharpe.

Localities: Galpagos Is., Daphne I., Indefatigable I., Seymour I., Wenman I.

18. *Menopon galapagensis* Kellogg and Kuwana.

Menopon galapagensis Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 487-488, Pl. 31, f. 4.

Recorded hosts: *Geospiza conirostris conirostris* Ridgway; *Nesomimus macdonaldi* Ridgway.

Locality: Galapagos Is., Hood I.

19. *Menopon hawaiiensis* Kellogg and Chapman.

Menopon hawaiiensis Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 165, Pl. 15, f. 2.

Recorded host: *Chlorodrepanis virens* (Gmelin).

Locality: Hawaiian Is., Maui I.

20. *Menopon hilensis* Kellogg and Chapman.

Menopon hilensis Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, pp. 166-167, Pl. 15, f. 4.

Recorded host: *Vestiaria coccinea* (Forster).

Locality: Hawaiian Is., Hilo.

21. *Menopon incertum* Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 533-534, Pl. 73, f. 2.

M. incertum Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 488-498.

M. incertum Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 322.

Recorded hosts: *Certhidea olivacea* Gould; *C. becki* Rothschild; *Geospiza f. fuliginosa* Gould; *G. c. conirostris* Ridgway;

G. fortis Gould; *Nesomimus p. parvalus* (Gould); *N. macdonaldi* Ridgway; *N. parvulus barringtoni* Rothschild; *N. melanotis* (Gould); *Cactospiza pallida producta* (Ridgway); *Camarhynchus parvulus salvini* Ridgway; *Platypiza crassirostris* (Gould) (*Camarhynchus variegatus*); **Progne modesta* (Neboux); **Actitis macularia* (Linn.); **Oceanites gracilis galapagoensis* Lowe; *Procel-laria tethys* (Bonaparte); **Anous stolidus galapagensis* Sharpe; **Sterna fuscata crissalis* Lawrence (*Sterna fuliginosa*).

Probable true hosts: All the above save those asterisked *.

Localities: Galapagos Is., Albemarle I., Narborough I., Chat-ham I., Gardner I., Barrington I., Wenman I., Clipperton I., Bindloe I., James I., Indefatigable I.

22. *Menopon narboroughi* Kellogg and Kuwana.

Menopon narboroughi Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 485-486, Pl. 31, f. 2.

M. narboroughi Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 322.

Recorded hosts: *Butorides sundevalli* Reichenow; *Puffinus obscurus subalaris* Ridgway; *Sula dactylatra granti* Rothschild; *Anous stolidus galapagensis* Sharpe.

Probable true host: *Puffinus obscurus subalaris* Ridgway.

Localities: Galapagos Is., Narborough I., Culpepper I., Bindloe I.

23. *Menopon navigans* Kellogg.

Menopon navigans Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 156-157, Pl. 14, f. 4, 5.

M. navigans Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 322.

M. navigans Kellogg, Ewing, 1924, Zoologica, N.Y., V, p. 32.

Recorded hosts: *Sula dactylatra granti* Rothschild; *S. neboxii* Milne-Edwards.

Localities: Galapagos Is.

24. *Menopon numerosum* Kellogg.

Menopon numerosum Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 159-160, Pl. 15, f. 1.

M. numerosum Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 321.

Recorded host: *Puffinus obscurus subalaris* Ridgway.

Locality: Galapagos Is., Seymour I.

25. *Menopon singularis* Kellogg and Kuwana.

Menopon singularis Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 485, Pl. 31, f. 1.

M. singularis Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 321.

M. singularis Kellogg and Kuwana, Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, p. 59, f. 11.

Recorded hosts: *Anous stolidus galapagensis* Sharpe; *Phaethon aethereus* Linn.; *Sula dactylatra granti* Rothschild; *S. nebouxii* Milne-Edwards; *Sterna fuscata crissalis* Lawrence; *Fregata minor* (Lesson).

Probable true hosts: *Anous stolidus galapagensis* Sharp; *Sterna fuscata crissalis* Lawrence.

Localities: Galapagos Is., Clipperton I., Culpepper I., Wenman I., Seymour I., Bindloe I.; Marquesas Is., Hatutu.

26. *Menopon snodgrassi* Kellogg and Kuwana.

Menopon snodgrassi Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 486-487, Pl. 31, f. 3.

Recorded host: *Coccyzus melacoryphus* Vieillot.

Locality: Galapagos Is., Chatham I.

27. *Menopon sternophilum* Ferris.

Menopon sternophilum Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, p. 59, f. 12.

Recorded host: *Onychoprion fuscatus* Linn. (*Sterna fuscata*).

Locality: Marquesas Is., Teuaua, off Uahuka.

28. *Colpocephalum angulaticeps* Piaget.

Colpocephalum angulaticeps Piaget, 1880, Les Pédiculines, Leiden, p. 569, Pl. 47, f. 8.

C. spineum Kellogg, 1899, Occ. Pap. Calif. Acad. Sci., VI, pp. 38-39, Pl. 4, f. 1.

C. spineum Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 484.

C. spineum Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 320.

C. angulaticeps Piaget, Ferris, 1932, Bull. Bishop Mus., Honolulu, 98, p. 54, f. 8.

Recorded hosts: *Anous stolidus galapagensis* Sharpe; *Geospiza f. fuliginosa* Gould; *Puffinus obscurus subalaris* Ridgway; *Sula piscator websteri* Rothschild; *Fregata* sp. (*Fregata aquila*); *F. minor* (Lesson) (*F. minor*).

Probable true host: *Fregata* spp.

Localities: Galapagos Is., Clipperton I., Albemarle I., Wenman I., Clarion I.; Marquesas Is., Atuona, Hivaoa.

29. *Colpocephalum brachysomum* Kellogg and Chapman.

Colpocephalum brachysomum Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, 162-163, Pl. 14, f. 3.

Recorded hosts: ? *Asio flammeus* (Pontopp.) (*Asio accipitrinus*); *Pluvialis dominicus fulvus* (Gmelin) (*Charadrius dominicus fulvus*).

Probable true host: *Asio flammeus* (Pontopp.).

Localities: Hawaiian Is., Maui I., Tao Valley, Kahului.

30. *Colpocephalum discrepans* Kellogg and Chapman.

Colpocephalum discrepans Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, pp. 164-165, Pl. 15, f. 1.

Recorded hosts: '*Carpodacus mexicanus obscurus*'; *Anous stolidus* (Linn.).

Locality: Hawaiian Is., Maui I., Kahului.

31. *Colpocephalum flavescens* Nitzsch.

Colpocephalum flavescens Nitzsch in Lyonet, 1829, Mém. du Mus., XVIII, p. 262, Pl. 12.

C. flavescens Nitzsch, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 321.

Recorded hosts: *Buteo galapagoensis* Ridgway; *Fregata* sp.

Probable true host: *Buteo galapagoensis* Ridgway.

Localities: Galapagos Is., Indefatigable I., Wenman I.

32. *Colpocephalum heterosoma* Piaget.

Colpocephalum heterosoma Piaget, 1880, Les Pédiculines, Leiden, p. 572, Pl. 48, f. 3, 4.

C. heterosoma Piaget, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 321.

Recorded host: *Progne modesta* (Neboux).

Probable true host: *Phoenicopterus ruber* Linn.

Locality: Galapagos Is., Indefatigable I.

33. *Colpocephalum subaequale* Nitzsch.

Colpocephalum subaequale Nitzsch in Burmeister, 1838, Handbuch der Entomologie, ii, p. 438.

C. semicinctum Rudow, 1866, Z. ges. Naturw., XXVII, p. 471.

C. subaequale Nitzsch, Kellogg, 1906, XXXII, p. 321.

Recorded hosts: *Sula piscator websteri* Rothschild; *Fregata* sp. (*F. aquila*); *Corvus* sp.

Probable true host: *Corvus* sp.

Locality: Galapagos Is., Clarion I.

34. *Colpocephalum unciferum* Kellogg.

Colpocephalum unciferum Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 140-142, Pl. 12, f. 1, 2, 3.

C. unciferum Kellogg, Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, p. 484.

C. unciferum Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 321.

C. unciferum Kellogg, Ewing, 1924, Zoologica, N.Y., V, p. 82.

Recorded hosts: *Certhidea olivacea* Gould; *Sula dactylatra granti* Rothschild; *Fregata* sp. (*Fregata aquila*); *Anous stolidus galapagensis* Sharpe; '*Anas versicolor*'; *Pelecanus occidentalis* Linn. (*Pelecanus* sp.).

Probable true host: *Pelecanus occidentalis* Linn.

Localities: Galapagos Is., Albemarle I., Wenman I.

35. *Actornithophilus epiphanes* (Kellogg and Chapman).

Colpocephalum epiphanes Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, pp. 161-162, Pl. 14, f. 2.

Actornithophilus epiphanes Kellogg and Chapman, Ferris, 1916, Canad. Ent., XLVIII, p. 304.

Recorded host: *Anous stolidus* (Linn).

Locality: Hawaiian Is., Maui I., Kahului.

36. *Actornithophilus grandiceps* (Piaget).

Colpocephalum grandiceps Piaget, 1880, Les Pédiculines, Leiden, p. 558, Pl. 46, f. 7.

C. grandiceps Piaget, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 321.

Actornithophilus grandiceps (Piaget), Ferris, 1916, Canad. Ent., XLVIII, p. 304.

Recorded host: *Haematopus palliatus galapagensis* Ridgway.

Locality: Galapagos Is., Indefatigable I.

37. *Actornithophilus kilauensis* (Kellogg and Chapman).

Colpocephalum kilauensis Kellogg and Chapman, 1902, J.N.Y. ent. Soc., X, p. 161, Pl. 14, f. 1.

Actornithophilus kilauensis (Kellogg and Chapman), Ferris, 1916, Canad. Ent., XLVIII, p. 161.

Recorded host: *Heteractitis incanus* (Gmelin).

Locality: Hawaiian Is., Hilo.

38. *Actornithophilus milleri* (Kellogg and Kuwana).

Colpocephalum milleri Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci., IV, pp. 483-484, Pl. 30, f. 6.

C. milleri Kellogg and Kuwana, Kellogg, 1906, Trans. Amer. ent. Soc., XXXII, p. 321.

C. milleri Kellogg and Kuwana, Uchida, 1918, Annot. Zool. Jap., IX, p. 488.

Actornithophilus milleri (Kellogg and Kuwana), Ferris, 1916, Canad. Ent., XLVIII, p. 304.

A. milleri (Kellogg and Kuwana), Ferris, 1935, Bull. Bishop Mus., Honolulu, 113, pp. 7-9, f. 1, 2.

Recorded hosts: *Anous stolidus galapagensis* Sharpe; *Butorides sundevalli* Reichenow; *Camarhynchus affinis* Ridgway; *Geospiza f. fuliginosa* Gould; *G. fortis* Gould; *Phaëthon aethereus* Linn.; *Sula dactylatra granti* Rothschild; *S. neboxii* Milne-Edwards; *Nesopelia g. galapagoensis* (Gould); *Anous stolidus* (Linn.); *Gygis ternatensis* (Linn.) (*Sterna melanauchen*).

Probable true host: *Anous stolidus* (Linn.).

Localities: Galapagos Is. Clipperton I., Narborough I., Albe-marle I., Bindloe I., Wenman I., Seymour I.; Ponape Is.; Tahiti, Hitiaa.

39. *Actornithophilus timidus* (Kellogg).

Colpocephalum timidum Kellogg, 1896, Proc. Calif. Acad. Sci., VI, Ser. 2, pp. 145-147, Pl. 12, f. 6.

C. timidum Kellogg, Johnston and Harrison, 1912, Trans. N.Z. Inst., XLIV, p. 364.

Actornithophilus timidus (Kellogg), Ferris, 1916, Canad. Ent., XLVIII, p. 304.

A. timidus (Kellogg), Waterston, 1928, Insects of Samoa, Pt. VII, fasc. 3, p. 81.

Recorded host: *Pluvialis dominicus fulvus* (Gmelin).

Localities: Kermadec Is.; Samoa, Upolu, Apia.

40. *Eomenopon denticulatum* Harrison.

Eomenopon denticulatum Harrison, 1915, Parasitology, VII, pp. 385-388, f. 5, 6 and 16.

E. denticulatum Harrison, Uchida, 1926, J. Coll. Agric., Tokyo, IX, p. 31.

E. denticulatum Harrison, Waterston, 1928, Insects of Samoa, Pt. VII, fasc. 3, p. 78.

Recorded hosts: '*Eos rubiginosa*'; *Vini australis* (Gmelin).

Localities: Ponape I.; Samoa, Apia, Vaialele.

(To be continued)

Two exotic species of Carphophilus in Britain.—An example of *C. marginellus* Mots. taken at sap in Tooting in June last was recently brought in to the Museum for identification by Mr. H. Heasler, and very generously presented by the captor to the National Collection. It comes nearest to *C. dimidiatus* Fab. of British species, but is larger (3 mm. in length), pitchy-black to ferruginous in colour and more shining, the thorax less convex towards the sides, so that the narrow lateral borders are plainly visible from above. In the Museum collection it is represented by specimens from Japan, China, Penang, S. India, Ceylon and Mauritius. A closely related species, *C. obsoletus* Er., has been found on several occasions, in both London and Manchester, in jars of ginger preserved in syrup. This is about the same size as *C. marginellus* but duller, the thorax with evident depressions before the base and the elytra more uneven, somewhat leathery in appearance, and closely and coarsely punctate. Its distribution is very similar to that of the last species.—K. G. BLAIR, British Museum (Natural History), London, S.W.7: July 15th, 1938.

Monochamus sutor L. in S.W. Yorks.—A living specimen of this fine Longicorn was brought to me on July 14th. It is rather below the average in size, almost unflecked, and, except for the loss of the last two joints of the left antenna, in perfect condition. It was found in an allotment garden on an aster and its captor admitted to considerable nervousness when securing it, as its habit of carrying the antennae extended laterally at right angles to the head gives it a somewhat formidable appearance. Despite the circumstances of its capture, there can be little doubt that it is an importation, although its source may not be traceable.—E. G. BAYFORD, 16 Rockingham Street, Barnsley: July 20th, 1938.

Beetles in a Church.—In the parish church of Kegworth (Leicestershire) some specimens of *Xestobium rufo-villosum* De G. were noticed in one of the aisles for the first time on April 6th. A search was made all over the aisles, in the pews, behind hassocks, etc. Altogether nineteen beetles were obtained. There was evidence that the beetles had fallen from the fine old Tudor roof of the church. As far as possible, counts were made daily to ascertain the full swarm-period of the insects. It is interesting to note that when a day's counting had been omitted, one did not get a double number of specimens the next day. It must be presumed that the beetles either flew back at night, or more probably secreted themselves down crevices, gratings, etc. None were observed in flight, although several were noticed displaying their wings. From April 6th to April 15th the average daily catch of beetles was 14.8, from April 16th to 30th it was 14.9, from May 1st to 16th it was 15, and from May 17th to 31st it had fallen to 8.3. There were five beetles on May 31st, none on June 1st or 2nd, a solitary one on June 3rd, and the last one appeared on June 8th. The next most abundant species was *Attagenus pello* L., with an average of about one a day. The greatest number taken on any one day was six. This presumably feeds on the hassocks. *Corynetes coeruleus* De G. was taken on three occasions. *Anobium domesticum* Fourc. occurred in the pews, presumably feeding in the woodwork of the pews or the floorboards. Several specimens of *Ptinus fur* L. were taken and one of *Trox scaber* L. The numerous specimens of *Adalia bipunctata* L., often flying in the church, and those of *Meligethes aeneus* F. and one of *Sitona sulcifrons* Thunb. were presumably introduced by flowers used for decoration.—A. ROEBUCK, Midland Agricultural College, Sutton Bonington, Loughborough: August 15th, 1938.

Occurrence of Hyponomeuta rorella Hüb. in Lincolnshire.—A larval nest of this species was taken from a tree of *Salix alba* on June 16th at Haverholme Priory, near Sleaford. From June 24th they were reared on *Salix repens*. Pupation took place at the end of the month and all emerged as adults of this species on July 15th and 16th.—A. ROEBUCK: *August 15th*, 1938.

Records of Worcestershire Orthoptera.—Dr. Malcolm Burr, in his book (British Grasshoppers and their Allies, London, 1936, p. xii), remarks upon the scarcity of records of Orthoptera from the Midland Counties, particularly Shropshire and Worcestershire, from which apparently no Orthoptera had ever been recorded up to the preparation of this work. It seems desirable therefore to publish the following records of Worcestershire Acridiidae collected during August Bank Holiday week-end, 1938, chiefly by the roadside.

Chorthippus bicolor (Charp.), near Pershore, 31.vii.1938, and near Holt Heath, 31.vii.1938. (There is also a specimen in the Lucas Collection in the Oxford University Museum labelled 'Great Malvern, Sept., 1906, E. Lucas.') *Ch. parallelus* (Zett.), near Holt Heath, 31.vii.1938, and near Feckenham, 1.viii.1938. *Ch. albomarginatus* (De Geer), near Pershore, 31.vii.1938.—ERNEST TAYLOR, Oxford University Museum: *August 15th*, 1938.

A new locality for Hypogastrura octoculata Wom. (Collembola).—Among some Collembola recently submitted to me for determination by Lt.-Col. E. A. Glennie, I was pleased to discover a single specimen of *Hypogastrura* (*Schäfferia*) *octoculata* Wom. The insects were collected in a cavern, Lamb's Leer, in the Mendip Hills, Somerset, during July, where they were found disporting themselves on the surface of pools of water, associated with *Onychiurus fimetarius* L. The species was first described from specimens taken under rotting bark in Wicklow, and the describer notes that the species seems in some respects to be related to *H. cavicola* Born. The present record appears to be the first for England.—JAMES M. BROWN, 176 Carter Knowle Road, Sheffield: *August 4th*, 1938.

Review.

'A MONOGRAPH OF THE BRITISH ABERRATIONS OF THE CHALK-HILL BLUE BUTTERFLY' (*Lysandra coridon* Poda, 1761). By P. M. BRIGHT, J.P., F.R.E.S., and H. A. LEEDS. With suggestions for the Standardisation of Aberrational Terms for other Rhopalocera. Printed and published by the Richmond Hill Printing Works, Ltd., Yelverton Road, Bournemouth, 1938. 11 x 9 inches, pp. i—ix, 1—138, Plates 1—18. Price £3/3/0.

The beautiful and interesting little Lycaenid butterfly, well known under the familiar name of the 'Chalk Hill Blue,' has always been a favourite species with entomologists, and more especially so in recent years, since the late J. W. Tutt, in the fourth volume of his 'Natural History of the British Butterflies,' dealt exhaustively with the various forms and aberrations known at the time of its publication. The discovery later on of the remarkable isolated colony of the butterfly at Royston, Herts, with its wealth of peculiar and striking forms, has also added greatly to its interest among Lepidopterists, who will doubtless welcome the handsome and beautifully printed volume now

under notice. Nearly 400 varieties and aberrations of *L. coridon*, largely from the very rich and comprehensive collection of Mr. Percy M. Bright, one of the joint authors of the work, and including some most extraordinary forms of both sexes, are represented of the actual size on eighteen plates. The first five of these plates are produced by the direct four-colour process, and in these the elusive and practically inimitable blue tints of both the male and female butterfly are on the whole more faithfully presented than in any other figures of the insect with which we are acquainted. The half-tone figures of the undersides on Plates 6—18, which involve fewer technical difficulties, leave nothing to be desired. Concise descriptions of the specimens figured occupy most of the letterpress, but these are preceded by a comprehensive life-history of the butterfly, and by brief but valuable notes on Homoeosis and Gynandromorphism by Dr. E. A. Cockayne. On pp. 87—94 are detailed suggestions for the arrangement of specimens under the aberrational terms, which are also indicated for five other species of British Lycaenidae. This attempt to give a definite appellation to each and every departure from the normal, even though the specimen in question be accidental or unique, has in very many cases resulted in compound names of almost alarming length and complexity, which we imagine few, if any, will care to remember; indeed, if all the names in this work are adopted, *Lysandra coridon* will be saddled with an even heavier burden of nomenclature than the unfortunate *Parnassius apollo*! But apart from this handicap, the book remains as a valuable contribution—pictorially at least—to our knowledge of the variation in Britain of one of the most interesting of our smaller butterflies.

Society.

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club took place at 1/5 Albany, Piccadilly, on Tuesday, May 31st, 1938, Mr. R. W. Lloyd in the Chair.

Members present in addition to the Chairman: Mr. H. Donisthorpe, Mr. H. Willoughby Ellis, Mr. J. E. Collin. Visitors present: Dr. K. G. Blair, Dr. Karl Jordan, Sir Guy A. K. Marshall, Dr. A. S. Neave, Mr. Otter, Capt. N. D. Riley, Mr. W. Rait Smith, Mr. W. H. T. Tams.

The meeting was called for 7.30, at which hour the members and guests arrived. Dinner was served at 7.45.

After dinner the Chairman's collections of Lepidoptera and Coleoptera were inspected and many of the party took the opportunity of specially looking at portions of the Coleoptera which contained rare specimens collected by the Chairman many years ago. A further collection of Coleoptera, made in the neighbourhood of the Chairman's country seat, Treago Castle, was also on view. This district, but little worked in the past, would appear to be a very prolific spot for species of that Order. Other visitors were interested in the works of art which surrounded them.

Mr. W. Rait Smith was elected a member of the Club.

The party broke up at between 11 and 11.30 after a very pleasant and most entertaining evening.—H. WILLOUGHBY ELLIS, *Hon. Secretary*.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST.

BY HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S., ETC.

(Continued from p. 171)

A. humile Germ. By beating birch, crab-apple, faggots in willow-swamp, and by sweeping ox-eye daisy, dock, wood-sage, etc.; very common. (iv, v, vi, vii, viii, ix, x.)

Otiorrhynchus picipes F. In cut grass, by sweeping; abundant by beating Scots pines. (v, viii, ix.)

O. sulcatus F. Under stones; scarce. (vii.)

O. ovatus L. In moss, cut grass, haystack bottoms, and by beating faggots and sweeping; common. (vi, vii, viii, ix.)

Caenopsis waltoni Boh. By sweeping, and in stool of tree; in numbers in sand-pit. (v, vi, vii, viii, xi.)

Strophosomus coryli F. By sweeping, in reed-refuse, sand-pit, etc.; common. (iv, v, viii, ix.)

S. capitatus De G. By beating young larch trees, and oaks; common. (iv, v, ix.)

S. lateralis Pk. In sand-pit; common sweeping heath and ling. (v, vii, viii.)

Exomius araneiformis Schr. By beating faggots in willow-swamp, in flood-refuse, frass of oak and ash, fern-stack refuse, at roots of trees, under stones, and in sand-pit; abundant. (iv, v, vi, vii, viii.)

E. pellucidus Boh. In sand-pit, and flood-refuse; scarce. (vii, xii.)

Sciaphilus muricatus F. In flood-refuse, and by sweeping; not common. (v, xii.)

Tropiphorus tomentosus Marsh. In sand-pit; scarce. (v.)

Liophloeus nubilus F. By sweeping; scarce. (viii.)

Polydrosus pterygomalis Boh. By beating oaks; not common. (vii, viii.)

P. flavipes De G. 'Windsor Forest' (Fowler, 1891).

P. cervinus L. By beating sallows, birch, aspens, and by sweeping; common. (v, vi, vii.)

Phyllobius oblongus L. By beating hawthorn, elms, etc.; common. (v, vi, vii.)

P. oblongus L. ab *floricola* Hbst. By beating elm; scarce. (vi.)

P. calcaratus F. Abundant on alders. (vi.)

P. urticae De G. By sweeping nettles; common. (v, vi, vii.)

P. pyri L. By beating hawthorn, oaks, etc.; common. (v.)

P. argentatus L. By beating hawthorn blossoms, birch, etc., and by sweeping; common. (v, vi.)

P. maculicornis Germ. By sweeping, beating hawthorn blossoms; abundant by beating birch. (v, vii.)

P. pomonae Ol. By sweeping, grass, rushes, etc.; common, but local. (vi, vii.)

P. pomonae Ol. ab *cinereipennis* Gyll. Occurs with the typical form, but much less common. (vi.)

P. viridiaeris Laich. By sweeping and beating hawthorn; common. (v, vi.)

Tanymecus palliatus F. By sweeping thistles; local and scarce. (vii.)

Atactogenus exaratus Marsh. By sweeping; scarce. (v.)

Barynotus obscurus F. In flood-refuse, and remains in oak frass with *A. (D.) brunneus*; scarce. (x, xii.)

Alophus triguttatus F. On stacks of wood; scarce. (vi.)

Sitones cinerascens F. In cut grass, moss, sand-pit, at the roots of Bird's-foot Trefoil (*Lotus corniculatus*); not uncommon. (v, vii, viii, ix.)

S. regensteiniensis Hbst. By beating gorse and broom; common. (iv, v.)

S. crinitus Hbst. By sweeping; scarce. (vii, xi.)

S. tibialis Hbst. By general sweeping; abundant by sweeping Needle Green-weed (*Genista anglica*). (vi, viii, ix, x.)

S. hispidulus F. In cut grass, under loose hay, and by sweeping; common. (vii, viii, ix, x.)

S. meliloti Walt. By sweeping in lane, and abundant by sweeping melilot; local. (vi, vii.)

S. flavescens Marsh. In cut grass and by sweeping; not common. (vii, ix.)

S. puncticollis Steph. By sweeping; not common. (vii, viii.)

S. suturalis Steph. By sweeping ox-eye daisies, meadow pea and other vetches, etc.; common. (vi, vii, viii.)

S. ononidis Sharp. By sweeping; scarce. (vii.)

S. lineatus L. By sweeping vetches, etc., and by beating birch; common. (iv, v, vi, viii, ix, x.)

S. sulcifrons Thunb. By sweeping in willow-swamp, etc.; not common. (vi, vii, x.)

Gronops lunatus F. In cut grass and in sand-pit; scarce. (v, ix.)

Hypera punctata F. In cut grass, in sand-pit, and by sweeping; not common. (viii, ix.)

H. rumicis L. By sweeping, not common. (vi, viii.)

H. polygoni L. In sand-pit, and by sweeping *Persicaria* (*Polygonum*); not common. (v, ix.)

H. variabilis Hbst. By sweeping grass, etc.; abundant by sweeping melilot. (v, vii, viii.)

H. murina F. By sweeping, and in haystack bottom; not common. (vii, xi.)

H. plantaginis De G. In cut grass, sand-pit, and on grass stems; not common. (iii, v, viii.)

H. trilineata Marsh. By sweeping; scarce. (vii.)

H. nigrirostris F. By sweeping and beating faggots in willow-swamp; in flood-refuse, by sweeping melilot, etc.; common. (v, vii, vii, xii.)

H. nigrirostris F. ab. *ononinis* Fowler (*nec ononidis* Chevr.). By sweeping; scarce. (vii.)

Liosoma ovatum Clairv. In moss, and by sweeping; not common. (iv, v, viii.)

L. ovatum Clairv. v. *collaris* Rye. By sweeping; scarce. (ix.)

Curculio abietis L. (*Hylobius* Schönherr). By beating cut fir-tops, and in sand-pit; not common. (iv, v, viii.) This species had been very common before we commenced to collect in the district, and was very destructive; but immense numbers had been collected by hand and destroyed.

Pissodes notatus F. By beating Weymouth pines, young Scots pines, fir-tops, etc.; also dug out of young burnt pines, and under pine bark; not uncommon, but local. (v, vii, viii, ix.)

Orchestes quercus L. By sweeping, beating crab-apple and hawthorn blossoms; common by beating oaks. (iv, v, vii, viii, ix.)

O. alni L. By sweeping; abundant by beating elm hedges, etc. (iv, v, vi, vii.)

O. ilicis F. 'Windsor' (Fowler, 1891). By sweeping; scarce. (x.)

O. avellanae Don. By evening sweeping, under bark, on felled tree, etc.; not common. (vii, x.)

O. fagi L. By beating *Prunus* blossoms, and abundant on beeches. (iv, v, vi, vii, viii, ix, x.)

O. rusci Hbst. By beating birch, sweeping chamomile, etc.; common. (v, vii, viii.)

O. stigma Germ. By sweeping chamomile, etc.; in sand-pit; common by beating sallows. (v, vi, vii, viii, ix.)

O. salicis L. By sweeping and beating sallows; not common. (iv, viii.)

Rhamphus flavicornis Clairv. By sweeping and beating hawthorn; abundant by beating sallows. (v, vi, vii, viii.)

Erirrhinus acridulus L. On mud round ponds, and by sweeping in swamps, etc.; not uncommon. (iv, v, vi, viii, ix.)

Thryogenes festucae Hbst. By sweeping reeds, etc., in marshy places; not common. (vi.)

T. nereis Payk. Under the same conditions as the above and more common. (v, vi.)

T. scirrhosus Gyll. One specimen by sweeping reeds, etc., round pond; 26.viii.31.

Dorytomus vorax F. In and under bark of cut-down poplars; local and scarce. (xi.)

D. tortrix L. By beating hawthorn; not uncommon by beating aspens. (v, vi.)

D. maculatus Marsh. By beating maple tree in bloom and hawthorn; abundant by beating sallows. (iv, v, vi, vii.)

D. maculatus Marsh. v. *costirostris* Gyll. 'Windsor Forest' (Fowler, 1891). On young aspens; scarce. (iv.)

D. maculatus Marsh. v. *silbermanni* Wenok. In grass tufts; scarce. (iv.)

D. melanophthalmus Payk. By beating sallows; not uncommon. (iv, vi, x, xi.)

D. melanophthalmus Payk. v. *agnathus* Boh. Generally in company with the typical form; but less common. (iv, v, x.)

D. pectoralis Gyll. By sweeping, by beating hawthorn; abundant by beating sallows. (iv, v, vi, vii, ix, x, xi.)

Smicronyx jungermanniae Reich. One specimen by beating fir-tops! 3.v.36. Its proper habitat is on the lesser Dodder (*Cuscuta epithymum*) on furze and heath. At Windsor we have tried this without success.

Tanysphyrus lemnae F. In moorhen's nest, by sweeping Great Water-Plantain (*Alisma plantago*), on Duck-weed (*Lemna minor*); common in moss from dry pond. (vii, viii.)

Bagous alismatis Marsh. One specimen in a moorhen's nest 6.vii.32. The Water-Plantain has been swept and searched without success.

B. lutulosus Gyll. One specimen by sweeping White Sedge (*Carex canescens*) in *Sphagnum* swamp 9.v.36.

Anoplus plantaris Naez. By sweeping in plantations, camomile, etc., and by beating hawthorn, willows, birch; not uncommon. (v, vii, viii, ix.)

Elleschus bipunctatus L. By beating willows, sometimes in numbers; local. (iv, v.)

Tychius meliloti Steph. Abundant by sweeping melilot (vii, x.)

T. tomentosus Hbst. By sweeping ox-eye daisies; scarce. (vi.)

Miccotrogus picirostris F. In flood-refuse, moss in willow-swamp, by beating Scots pine, and by sweeping Tormentil (*Potentilla Tormentilla*), reeds, etc.; very common. (v, vi, vii, viii, xii.)

Sibinia potentillae Germ. By beating hawthorn and sweeping chamomile; scarce. (v, vii.)

S. primita Hbst. By sweeping; scarce. (viii.)

Miarus plantarum Germ. By sweeping rather short grass; scarce. (vi, vii.)

Gymnetron veronicae Germ. v. *nigrum* Walt. (*beccabungae* Fowler nec L.). By sweeping; scarce. (vii.)

G. plantaginis Epp. One specimen by general sweeping 10.vi.38.

G. rostellum Hbst. 'Windsor Forest' (Fowler, 1891).

G. lloydi Donis. One specimen of this very distinct species was swept off Garlic Mustard (*Alliaria officinalis*) 19.vi.29.

Mecinus pyrae Hbst. In hole in topmost twig of ash tree, by beating *Clematis*, and by general sweeping; not uncommon. (iv, v, viii, x.)

Anthonomus ulmi De G. By sweeping and beating elms, etc.; abundant (many dark abs.), also by beating hawthorn trees in winter. (vi, vii, x, xi, xii.)

A. rosinae Des Gozis. By sweeping; scarce. (vi.)

A. pedicularius L. By beating lime trees, and sweeping; abundant by beating hawthorn. (iv, v, vii, viii, xi.)

A. pomorum L. By beating hawthorn and blackthorn blossoms; more abundant by beating crab-apple blossoms. (iv, v, vi.)

A. rubi Hbst. In moss and by sweeping in willow-swamp, and general sweeping; common. (vi, vii, viii, ix.)

A. comari Crotch. By sweeping; scarce. (vii, viii.)

Nanophyes lythri F. By sweeping in willow-swamp; not uncommon but very local. (vi, vii, viii, ix.)

Cionus scrophulariae L. By sweeping Fig-wort (*Scrophularia aquatica* and *S. nodosa*); common. (v, vii, viii, ix.)

C. tuberculosus Scop. By sweeping fig-wort; very local and scarce. (ix.)

C. hortulanus Marsh. Common by sweeping fig.-wort. (v, vi, ix.)

C. blattariae F. By sweeping fig-wort; not common. (v, vii, viii, ix.)

C. pulchellus Hbst. Not uncommon by sweeping fig-wort. (v, vii.)

Orobitis cyaneus L. By general and evening sweeping; scarce. (v, viii.)

Acalles ptinoides Marsh. In sand-pit, by sweeping under fir trees, and on twigs on nests of *Formica rufa*; not common. (v, vii, viii, ix.)

A. turbatus Boh. By sweeping; scarce. (vii.)

Coeliodes rubicundus Hbst. By beating oak and birch; not common. (v, vi, vii, viii.)

C. quercus F. In flood-refuse, by beating fir tops, oaks, birch, willows, blossoms of *Prunus* and hawthorn; common. (iii, iv, v, ix.)

C. ruber Marsh. By beating birch and oak; scarce. (iv, v, vii.)

C. erythroleucus Gmel. By sweeping in plantations, and beating oaks, birch, and *Prunus* blossoms; common. (iv, v, vii, viii, ix.)

C. cardui Hbst. By sweeping; not common. (v, vii, x.)

C. quadrimaculatus L. Abundant by sweeping nettles. (v, vi, vii, viii, ix, x.)

Poophagus sisymbrii F. Very local, but not uncommon by sweeping Marsh Yellow Cress (*Nasturtium palustre*). (vi.)

Ceuthorhynchus assimilis Payk. By sweeping Shepherd's Purse (*Capsella Bursa-pastoris*), Hedge Mustard (*Sisymbrium officinale*), Garlic Mustard (*Alliaria officinalis*), Marsh Yellow Cress, etc.; common and widely distributed. (v, vi, vii, viii.)

C. constrictus Marsh. By sweeping Garlic Mustard, Hedge Mustard, ox-eye daisies, etc.; common. (v, vi, vii.)

C. cochleariae Gyll. On oak fence, by sweeping 'Milk-maids' (*Cardamine pratensis*); not uncommon. (iv, v, vi.)

C. ericae Gyll. On mud round pond, by sweeping heather (*Erica cinerea*); not uncommon. (vi, vii, viii.)

C. erysimi F. By beating faggots, in grass tufts, and by sweeping Hedge and Garlic Mustard; common. (iv, vii, viii.)

C. erysimi F. ab. *chloropterus* Steph. By sweeping Garlic Mustard in company with the typical form, but far less common. (vii.)

C. contractus Marsh. By sweeping Comfrey (*Symphytum officinale*), Chamomile (*Matricaria*), Hedge Mustard, in moss, in willow-swamp, etc.; very common. (v, vi, vii, ix.)

C. chalybaeus Germ. Abundant by sweeping Hedge Mustard. (vi, vii.)

C. hirtulus Germ. In moss in willow-swamp; scarce. (x.)

C. quadridens Pz. By sweeping rushes, Hedge and Garlic Mustard; not common. (vi, viii.)

C. pollinarius Först. By sweeping nettles. (v.) We appear to have only once taken this very common insect in this area.

C. picitarsis Gyll. Sweeping Garlic Mustard, and Field Pepperwort (*Lepidium campestre*); not common. (vi, vii.)

C. pleurostigma Marsh. By beating *Prunus* blossoms, and by sweeping Chamomile, *Polygonum Persicaria*, etc.; abundant. (iv, v, vi, vii, viii.)

C. alliariae Bris. By sweeping Garlic Mustard; not common. (vi.)

C. rugulosus Hbst. in moss in willow-swamp and by sweeping Chamomile; common. (v, vii.)

C. melanostictus Marsh. In moss in willow-swamp, etc., and by sweeping Water Mint (*Mentha hirsuta*); not uncommon. (iii, v, vi, vii, viii, ix.)

C. chrysanthemi Germ. Common by sweeping Ox-eye Daisies (*Chrysanthemum Leucanthemum*). (vi.)

C. litura F. By sweeping Figwort, but chiefly on thistles; not uncommon. (vi, vii, viii, ix.)

Ceuthorrhynchidius floralis Payk. In flood-refuse, grass-tufts, in moss, by beating faggots in willow-swamp, and by sweeping many species of *Cruciferae*; very common. (iv, v, vi, vii, ix, xii.)

C. palustre Edmonds. By sweeping Marsh Yellow Cress (*Nasturtium palustre*) in willow-swamp; very local and scarce. (vii.)

C. pyrrhorhynchus Marsh. By sweeping Garlic Mustard and common by sweeping Field Pepperwort. (vi, vii, viii.)

C. melanarius Steph. By sweeping reeds, etc., and Watercress (*Nasturtium officinale*); not common. (vi, vii, viii.)

C. troglodytes F. By beating faggots in willow-swamp; abundant by general sweeping. (v, vi, x.) *

C. rufulus Dufour. One specimen by sweeping in willow-swamp, 19.x.29. Usually confined to the coast.

Amalus haemorrhous Hbst. By sweeping grass; scarce. (vi.)

Rhinoncus pericarpus L. By sweeping wet grass, docks, *Persicaria*, etc.; abundant. (v, vi, vii.)

R. gramineus F. By sweeping rushes and damp grass; very abundant by sweeping Amphibious *Persicaria* (*Polygonum amphibium*). (vi, ix.)

R. perpendicularis Reich. Abundant by sweeping *Persicaria*. (v, vi, vii, ix.)

R. castor F. In sand-pit; abundant by sweeping coarse grass. (v, vi, vii, viii.) A specimen was observed to jump, 9.vii.35.

Phytobius comari Hbst. In moss in willow-swamp; scarce. (v, vi.)

P. waltoni Boh. By sweeping in marshy places; in numbers by sweeping a species of *Persicaria*. (v, viii.)

P. quadriluberculatus F. On mud round pond; scarce. (vi.)

P. canaliculatus Fähr. By sweeping reeds and water-mint; not common. (vii, viii.)

P. quadrinodosus Gyll. (= *Rhinoncus denticollis* Fowler). 'Windsor Forest, rare — S. Stevens' (Fowler, 1891).

Limnobaris t-album L. By sweeping; scarce. (vii.)

L. pilistriata Steph. Abundant by sweeping *Carex* in *Sphagnum* swamp. (vi, vii.)

Balaninus venosus Germ. By sweeping and beating hawthorn; not common. (v, vi.)

B. turbatus Gyll. By sweeping and beating oaks; not uncommon. (vi, vii, viii, ix.)

B. betulae Steph. By sweeping in a plantation of birch, fir and oak; scarce. (vii, viii, ix.)

B. rubidus Gyll. By sweeping in the same plantation as above; not uncommon. (vii, viii, ix.)

B. villosus F. On trunks of trees and by beating; not common. (iv, v, vi.) It has not been seen since 1928. An aberration clothed with yellow instead of grey hair taken on an oak tree, 6.vi.24.

B. salicivorus Payk. By sweeping and beating willows; common. (v, vi.)

B. pyrrhocerus Marsh. By beating willows, oaks, hawthorn, sweeping reeds, etc.; common. (v, vi, vii.)

Calandra granaria L. A specimen was taken in the wood-mould of a hollow ash tree, 3.ix.24. Possibly introduced in pheasant food.

Dryophthorus corticalis Payk. This genus and species new to Britain, which was discovered by Miss Kirk and myself in numbers in damp, tough wood inside an oak infested by the ant *A. (D.) brunneus* on 9.vii.25, occurs in abundance in such situations. A few isolated specimens have been found on oak trunks, a gate post, etc. The last seen was resting on the stack of elm logs (where *Gastrallus laevigatus* was first discovered), 21.vii.36.

Cossonus ferrugineus Clairv. In large numbers (many dead), and larvae and pupae, in wood-mould and soft wood in the centre of a large felled poplar tree, and at roots of other felled poplars. (vi, viii, xi.)

Rhyncolus lignarius Marsh. 'Windsor' (Fowler, 1891). In jackdaw's and other birds' nests, at sap on abraded bark, under bark of ash and elm, very abundant in rotten wood of maple trees, and bred in numbers from thick ivy stems. (iv, v, vii, viii, x, xi.)

Stereocorynes truncorum Germ. In 'Dryad' fungus, in some numbers in roots, frass, etc., of oaks infested by *A. (D.) brunneus*; abundant in ash tree in company with the same ant. (ii, vi, vii, viii, x, xi.)

Magdalinus armigera Fourc. By sweeping under trees and by beating hawthorn; bred in abundance from a small oak bough. (iv, v, vi.)

M. cerasi L. By beating Mountain Ash and hawthorn blossoms, sweeping in mixed plantation, etc.; not uncommon. (v, vi, vii, viii.)

M. pruni L. By beating hawthorn blossoms and branches; not uncommon. (v, vii.)

M. barbicornis Latr. By beating hawthorn blossoms and by beating and sweeping under hawthorns; not common. (v, vi, vii.)

SCOLYTIDAE.

Scolytus destructor Ol. Abundant in bark of elms, felled elms, elm branches, etc. (vi, vii, viii, ix.) Infesting a live standing elm tree, 7.ix.33.

S. pruni Ratz. By beating and under bark of hawthorn; scarce. (vii, viii.)

S. intricatus Ratz. By evening sweeping, on wood-stacks, in beech and oak boughs; bred in numbers from oak boughs. (v, vi, viii, ix.)

S. rugulosus Ratz. On cherry tree and abundant by beating old hawthorn trees. (vii, viii.)

S. multistriatus Marsh. Abundant in elm-bark. (v, vi, vii, viii, ix.)

Hylastes attenuatus Er. In sand-pits, by beating fir tops, flying over felled Scots pine, and in some numbers in and under Scots pine bark. (v, viii, ix, xi.)

H. ater Payk. Under the same conditions as above; commoner and more widely distributed. (iv, v, viii, xi.)

H. opacus Er. In sand-pit; scarce. (iv.)

H. palliatus Gyll. In larch branches, under spruce and fir bark and by beating burnt pines; not uncommon. (iii, v, vii, viii, ix.)

Hylesinus crenatus F. In bark of ash trees and stumps; not uncommon. (v, vi, vii.)

H. oleiperda F. By beating dead ends of ash twigs and in some numbers in the topmost branches of ash tree. (vii.)

H. fraxini Panz. By beating fir tops and hawthorn, in bark of ash; common on the wing and settling on ash logs. (v, vi, vii.)

H. vittatus F. On the wing; scarce. (v.)

Myelophilus piniperda L. By beating fir tops and burnt pines; common in and under Scots pine bark. (v, ix, x.)

M. piniperda L. ab. *rubripennis* Reitt. On the wing and by beating burnt pines; scarce. (iv, viii.)

Phloeophthorus rhododactylus Marsh. On and under Scots pine bark; scarce. (v.)

Cryphalus fagi Nord. By beating oak, and in abundance in dead branches and in small topmost branches of beech trees. (v, viii, ix.)

Pityophthorus pubescens Marsh. By evening sweeping, in topmost twigs of Scots pine, and by beating fir tops; abundant by beating young burnt Scots pines. (v, vii, viii, ix.)

Xylocleptes bispinus Duft. By beating stems of Traveller's Joy (*Clematis Vitalba*); very local. (viii.)

Dryocaetes villosus F. In oak tree with *A. (D.) brunneus*, in and under bark of chestnut and oak; common and abundant. (iii, iv, v, vi, vii, viii.) Males and females may be found in pairs in fresh burrows in oak bark.

Tomicus laricis F. By beating burnt pines, in and under bark of larch and spruce; abundant in all stages in and under bark of felled Scots pines. (iii, v, vii, viii, ix.)

T. nigritulus Gyll. This northern species, which was formerly regarded as very rare, occurs under bark of cut fir poles, and in and under the bark of felled Scots pines; abundant under the bark of fallen spruce trees (Kirk and Donisthorpe), 24.iii.33; common. (iii, iv, viii, xi.)

Pityogenes bidentatus Hbst. By sweeping, on fir logs, not uncommon by beating fir tops; abundant by beating young burnt Scots pines. (v, vii, viii, ix.)

Trypodendron domesticum L. In crevice in felled beech, on the wing, flying over beech logs, and under beech bark; not uncommon. (iii, iv, vii.)

Xyleborus dispar F. On the wing and on sappy oak stumps; in numbers, all females, in hard oak stumps. (v.)

X. dryographus Ratz. On butts of felled trees, on oak logs, beech stumps and under beech bark; not uncommon. (vi, vii.)

X. saxeseni Ratz. On oak fence, sappy oak stumps, felled beeches and oaks; abundant in and under beech bark. (iii, v, vi,

vii, ix.) Very abundant by beating and sweeping, on the wing and on timber, over a large area, 5.v.35.

Platypus cylindrus F. On and under bark of oak and beech logs and stumps; very abundant. Numbers of specimens may be seen flying to, crawling over and burrowing in freshly felled beech and oak trees. The beetles may be found in plenty by the frass outside the burrows where they have entered the bark of the felled trees. (iv, vii, viii.)

(To be concluded.)

A NEW GENUS AND SPECIES OF TENEBRIONID BEETLE IN BEE-HIVES IN INDIA.

BY K. G. BLAIR.

Platybollum gen. nov. (Triboliini).

Oblong, subdepressed, glabrous above. Eyes moderately distant; canthus flat, extending beyond the eyes, clypeus broadly but feebly emarginate, covering base of labrum with no connecting membrane exposed. Antennae very stout, subperfoliate, third joint not elongate, the rest transverse; last joint of palpi subovate, truncate at apex. Prothorax transverse, much wider at base than at apex, the sides evenly rounded, with margins rather widely explanate; apex shallowly emarginate with angles rounded; base feebly bisinuate with marginal sulcus; angles obtuse. Scutellum transversely triangular. Elytra subparallel with margins narrowly explanate, completely visible from above; striae not defined, each interval narrowly costate; epipleura complete; wings present. Underside: prosternal process depressed behind the coxae; mesosternum concave in front but not deeply excavate; metasternum about as long between coxae as the diameter of the mesocoxal cavity. First abdominal segment completely marginate in front, with acute intercoxal process. Legs rather short, femora scarcely projecting beyond sides of body, bicarinate beneath; tibiae slightly arcuate, rounded externally, not expanded at apex; apical spurs small; tarsi short; claw-joint nearly as long as the rest together.

• Type: *Platybollum alvearium* sp. nov.

Broader and more robust than most of the genera in this tribe, it bears a superficial resemblance to some of the Opatrinae, but lacks the characteristic clypeal excision and has the legs differently constructed. The very stout antennae suggest Ulominae, but the structure of the head and legs forbids this association, as also any with *Alphitobius*. In spite of its broader, flatter form the carinate intervals of the elytra are similar to those of *Tribolium* MacL. and *Aphanotus* Lec. In Seidlitz' key to the European genera of the tribe (Naturgesch. Ins. Deutschl. 5, 1894: 570) it would run down to *Tribolium*, from which, however, it differs, apart from its broader form, in the broad side margins of the thorax, stout antennae and the stouter, somewhat arcuate tibiae.

***Platybollium alvearium* sp. n.**

Rather more than twice as long as wide, dark castaneous, rugose-punctate above. Eyes above obliquely transverse, canthus as wide as lateral length of eye; frons densely rugose-punctate and raised in a small elevation above each eye; clypeus more finely and sparingly punctate; antennae with third joint scarcely longer than its apical width, fourth wider and strongly transverse, fifth to eleventh yet wider, subequal in width, set with large deep punctures interspersed with fine setigerous punctures. Thorax rugosely punctate throughout, the expanded margins redder than the disc. Elytra each with nine fine carinae, the eighth and ninth abbreviated about the level of the base of the last abdominal segment, the fifth at about the same level, the fourth and sixth usually uniting behind it; intervals between carinae densely punctate, but less coarsely and closely than the thorax, obscuring the striae. Underside more shining than above and, except on prosternum, finely and more sparsely punctate. Length 5.6 mm.

Habitat: INDIA, 27.i.1910, in excrement of *Galleria mellonella* L. (Brit. Mus., per H. E. Andrewes Coll.); Coimbatore, 26.viii.37, attacking honeycomb (Govt. Entomologist); Ceylon, vii.06 (Brit. Mus. per H. E. Andrewes Coll.). CHINA: Foochow (M. S. Young).

It would appear that more precise observations are required as to the status of the beetle in the hive, whether it is only a scavenger or is actually destructive to the wax of which the comb is constructed.

British Museum (Nat. Hist.),
South Kensington, S.W.7.
August 26th, 1938.

THE AQUATIC COLEOPTERA OF NORTH AND SOUTH
LINCOLNSHIRE.

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In September of last year I had a few hours' collecting in North Lincs in the neighbourhood of Haxey, about twelve or fourteen miles south-east of Doncaster and near the boundary of Notts, and this year, in August, during a short stay in Lincoln, I have further examined the water-beetle fauna of the county. I have been able to add a few species to the already fairly extensive list for Lincs North and have added considerably to the small list for Lincs South.

North and South Lincs are separated by the River Witham from Lincoln to the sea and from Lincoln to the Notts boundary by the Foss Dyke, so that there are extensive marshes in both vice-counties. As the North list already included 106 species, I spent most of my time in the South, where only forty species had

been recorded. I added only eight species to the North list and the South list now includes seventy-six species.

August is a bad month for collecting water-beetles, partly because many ponds and ditches are dry and partly because many species are then in the pupal stage, the parents having died out. In several cases I found numbers of soft, newly-emerged imagines, but larvae were scarce. I found many well-grown larvae of *Hygrobia* and a fair number of *Laccophilus* and undeterminable Hydroporines, but very few Colymbetines, the only Dytiscines being *Dytiscus* spp. in various stages from recently hatched to nearly full-grown.

Of the imagines, Haliplids were not abundant; only *H. ruficollis*, *immaculatus* and *lineatocollis* were common, being found in most of the drains, although many specimens of *obliquus* occurred in a few places where *Chara* was abundant. Only one or two *fluvialis* occurred and only three *heydeni*. *Peltodytes caesus* was represented by a single specimen. *Hygrobia tarda* was common, with its larvae, in most of the ponds I examined, and it also occurred in some of the dykes. *Noterus clavicornis*, the smaller species of the two, only occurred in one area of North Lincs, in the neighbourhood of Saltfleetby, where it was very common. It does not occur north of Yorks Mid-West and Yorks South-East, but south of that line it is local but frequently common. In the south-west, however, the only records are for Cornwall West and Devon South, and it is possible that these really refer to the other species. *N. clavicornis* never appeared in my net in Somerset, and there are no records for Gloucester, Wilts or Dorset. Even in East Sussex it is necessary to go to the extreme eastern border to find it. I did not find a single specimen of the larger species, *N. capricornis*, usually so abundant, and in Wood Walton Fen, Hunts, a week later, I only found one specimen.

Hyphydrus ovatus, including many soft, newly-emerged specimens, was common and a few larvae turned up. Last year I found in the River Poulter in Notts and in one or two drains near Haxey, Lincs North, specimens of both *Hygrotus versicolor* and *H. 5-lineatus* but, although the former was abundant in all the large dykes I examined, the latter was either in the larval or pupal stage, if it is widely spread through the marsh drains.

Deronectes assimilis was common in many of the large dykes, as was *D. elegans*, with the fine-pointed aedeagus, of which also a few larvae were found, and *D. 12-pustulatus* was not uncommon in some of the larger dykes.

One of the most interesting finds was *Oreodytes halensis*, which was very common in some of these slow-flowing dykes, and appeared to be mostly associated with *Chara*. Where it occurred, as many as ten or twelve came up in the net in each haul, and in some deep sandy ponds behind the sand-hills at Saltfleet I had more than a hundred specimens in the net after one haul. During all the time I collected in East Norfolk and in Cambridge I never found this species in the dykes, and only once in a running stream in Cambridge, the species being confined to gravel, sand and marl ponds where, especially in Norfolk, it was frequently common. As this species also turned up later in the month in Wood Walton Fen, Hunts, in an almost dry dyke, it seems that this is either a specially good year for it, or it has become more common than it used to be. *Hydroporus* was poorly represented both in species and in specimens, although *H. palustris* was to be found in most collections and *H. pictus* was occasionally in some numbers. I took a number of specimens of *H. granularis*, always in the hope that I might find *H. bilineatus*, but the latter species did not turn up. So far, this species has only been taken in Essex South, Kent East, Sussex East and North and South Somerset, but it is almost certainly more widely distributed than these records indicate. The most interesting *Agabus* was *chalconatus*, but it only appeared once in the net, when I obtained six specimens, of which the only male is of the true *chalconatus* form. This form I now know from six English divisions, Gloucester West, Oxford, Sussex West, Notts, Lincs North and Yorks Mid-West. Probably, however, the *melanocornis* form also occurs, as it has been taken in all the other five divisions mentioned, although both forms have not, so far, occurred together in the same habitat. In 1907 I saw specimens of this species from the Thornley collection, taken at Cadney and Epworth (Lincs North) and at Court Leys, near Grantham (Lincs South), but at that time the two forms had not been distinguished. *Copelatus agilis* occurred in various collections, but in one roadside dyke with very little water, in Holland Fen, a number of soft specimens were found and also two larvae, one of which was about full-grown and the other rather smaller. Two specimens only of *Rantus grapii* were found in one shallow roadside ditch. The species is here near the northern limit of its range, as it has not been recorded north of Yorks Mid-West and South-East. Similarly, *Hydaticus transversalis* is a southern species hitherto unrecorded north of a line from East Norfolk to Salop, except for Askham Bog, Yorks Mid-West, but I found one specimen in Lincs

North. The species is not uncommon in East Norfolk, Cambridge and Hunts and also in Somerset North and South, but it is mostly found in fen drains. There are records for Leicester, Glamorgan and Surrey. The Salop and Surrey records date back to Stephens; the Glamorgan record is hearsay, but there appear to be several records for Leicester, although it is possible that *seminiger* was the species taken.

Although *Orectochilus villosus* is recorded throughout England, Ireland and a large part of Scotland, there has, so far, been no record for Lincoln. I found two specimens in a fast-flowing part of the River Bain near Hemingly but, as usual, it was dug out of its sleeping quarters by the net. I have never seen this species disporting itself during the day, except after it has been disturbed by the net, and I have undoubtedly disturbed it from submerged places on some occasions, suggesting that it becomes torpid during the day and gets any air it requires for respiration from that dissolved in the water.

Hydrophilids were very scarce, with a few exceptions. *Laccobius oblongus*, which Knisch (1924: 191) gives as a synonym of *sinuatus* Motsch., was very common in a number of the large slow-flowing dykes, whereas *L. alutaceus* and *biguttatus* only turned up occasionally. No species of *Helophorus* was common, even *H. brevipalpis* being scarce. *Octhebius impressus* and *Hydraena riparia* occurred frequently but in small numbers.

Lincolnshire is near the northern limit of the vast extent of low ground which was once wet fen, and which stretches with a few gaps from Sussex and Kent up to about Bridlington and in some places far inland. The once excellent collecting ground at Chandler's Whin and Askham Bog is probably one of the last remaining inland pockets in this area, now mostly dry pasture dissected by numerous drains or dykes, where at one time regions of marsh-land formed an ideal home for water-beetles. Few areas of real fenland remain. Wicken, Cambs., is degenerating rapidly, and even when I worked it for the paper published in the Natural History of Wicken Fen (1926), I found no species there which were not also to be found in the drained areas all round the district. Similarly, Wood Walton Fen, Hunts, although still possessing some of the rarer species, is beginning to suffer as the result of the lowering of the water table and will doubtless soon become no better than Wicken. If work on this fen, similar to that organised by Stanley Gardiner for Wicken, is to be carried out, as it should be, the sooner such work is begun the better for

a record of the fen.

The fens of North and South Lincoln, so far as I saw them, appeared to be silt fens, not peat fens such as some of those farther south around Cambridge, Hunts and Norfolk, but so far as I know the peat fen is not richer in water-beetles.

Among previous records for the county are a few of special interest. *Hygrotus decoratus* is included in the list of Lincolnshire Coleoptera by Thornley and Wallace (20),* the localities being given as Irby Dale and Tetney. The species used to be common at Askham Bog (Yorks Mid-West), the extreme northern limit of its range. *H. parallelogrammus*, usually a brackish water species, occurs in the same list, as having been taken in large numbers in a brackish drain at Humberstone.

In 1908 I saw a specimen of *Ilybius subaeneus* from Holton-le-Moor, sent me by Wallace, and presumably this is the single specimen taken by Bullock in that year and the only Lincoln specimen known. It seems probable, however, that the species is established somewhere in the county, as I found it in Notts last year and Tottenham also found it in that county but close to the Lincoln boundary.

Rantus bistriatus appears in the above-mentioned list on one specimen, taken by Thornley at Epworth, but in an MS. list kindly sent me by Wallace in the same year he gives the localities as 'Haxey and Epworth,' as if other specimens had been taken. There are a number of records for this species from places where it is most unlikely to occur, and it seems probable that either *pulverosus* or *notatus* has actually been taken, or even the form of *exsoletus* with a dark underside. I have seen several specimens of *bistriatus* from different places which had been identified as *exsoletus* var. *nigriventris*, so that mistakes in the opposite direction are not improbable. I have, therefore, queried the record in the list.

The record for *Gyrinus suffriani* by Thornley from Leamlands is credited to Claude Morley. Excepting a record for 'Maxwell-town Loch,' Kirkcudbright, in an MS. list I received from Lennon in 1896, almost certainly an error, this species is confined to south-east England, this Lincoln record being the most northern, the most southern and western being Sussex East.

In 1908 Newbery identified *Helophorus porculus* as a British species and thus made useless all previous records of *H. rugosus*, with which it had been confused. I saw a North Lincs specimen of

* The numbers in brackets refer to the bibliography at the end of the paper.

rugosus from the collection of Wallace in 1909, and I have seen other specimens of the species from Yorks South-east, Cambridge and Berks. I have left *H. mulsanti* in the list as a distinct species, although I suspect that it is only a brackish water form of the *viridicollis* complex, and I see that d'Orchymont (15) also has stated that a British specimen 'n'était pas à séparer de *viridicollis* Steph.' Apparently, however, Rye's species is not the same as that of Bedel, although that author described it as *mulsanti* Rye. It may be that we have a brackish form of *viridicollis* and also *fulgidicollis* Motsch. which is very like ours and which occurs in France and southwards to North Africa, unless, perhaps, *fulgidicollis* is also a brackish water form of some continental species.

I have also left *H. quadrisignatus* in the list as a distinct species, although here again I think it possible that it is another form of the *viridicollis* complex. Another *Helophorus* complex is that involving *affinis* Marsham and *griseus* Herbst, which, in my opinion, are extremes of a series, *affinis* being the silt pond form confined to gravel and marl ponds, while *griseus* forms occupy other types of habitat. A record for *Hydrochus carinatus* from Irby appears in Vol. 6 of Fowler's British Coleoptera (p. 216) and is attributed to Wallace, and is presumably a record obtained since that author sent me his MS. list. Otherwise, the species is only known from Cambridge and Hunts (in both of which counties I have taken it; in the latter, again this year) and from West Norfolk. Edwards included it in his list of Norfolk Coleoptera (8), giving the locality as Brandon, which is in West Suffolk, whereas in a previous paper (7) he had referred to the locality as being in 'the neighbourhood of Brandon.'

In the following list 'A' indicates that I have taken the species, 'B' that I have seen a specimen or specimens said to have been taken in the county, while 'C' indicates either that there is a published record or that I have received information, by letter or by MS. list, that the species has been found. I must thank various friends, especially the Rev. Alfred Thornley and Dr. W. Wallace, for having contributed by means of specimens and lists to my knowledge of the water-beetles of the county.

LINCOLNSHIRE AQUATIC COLEOPTERA.

	Lincolnshire.					
	North.			South.		
<i>Brychius elevatus</i> Panz.	A	B	C	—	—	C
<i>Haliplus obliquus</i> Fab.	A	B	C	A	—	C
„ <i>confinis</i> Steph.	A	—	—	A	—	—
„ <i>flavicollis</i> Sturm	A	—	C	A	—	C



MEDIUM SIZED *Brocchinia micrantha* (BAKER) MEZ CUT TO SHOW
VERTICAL SECTION. (Scale shown in inches.)

Lincolnshire.

	North.			South.		
„ <i>fulvus</i> Fab.	—	B	C	A	—	—
„ <i>ruficollis</i> Deg. ...	A	B	C	A	—	—
„ <i>heydeni</i> Wehncke	A	—	—	A	—	—
„ <i>fluvialis</i> Aubé	A	B	C	A	—	C
„ <i>lineolatus</i> Mannh.	A	—	C	A	B	C
„ <i>immaculatus</i> Gerh.	A	—	C	A	—	C
„ <i>wehncke</i> Gerh.	—	—	C	A	—	C
„ <i>lineatocollis</i> Marsh.	A	B	C	A	—	C
<i>Peltodytes caesus</i> Duft.	—	—	—	A	—	C
<i>Hygrobia tarda</i> Herbst.	A	—	C	A	—	—
<i>Noterus clavicornis</i> Deg.	A	—	—	—	—	—
„ <i>capricornis</i> Herbst (<i>sparsus</i> Marsh.) ...	—	—	C	—	—	—
<i>Laccophilus hyalinus</i> Deg. (<i>interruptus</i> Panz.) ..	A	—	C	A	—	C
„ <i>minutus</i> Linn. (<i>obscurus</i> Panz.) ..	A	—	C	A	—	C
<i>Hyphydrus ovatus</i> Linn.	A	—	C	A	—	C
<i>Hygrotus versicolor</i> Schall.	A	B	C	A	—	C
„ <i>5-lineatus</i> Zett.	A	—	—	—	—	—
„ <i>inaequalis</i> Fab.	A	B	C	A	—	C
„ <i>decoratus</i> Gyll.	—	—	C	—	—	—
„ <i>confluens</i> Fab.	—	—	C	—	—	—
„ <i>parallelogrammus</i> Ahr.	—	—	C	—	—	—
„ <i>impressopunctatus</i> Schaller	A	—	—	A	—	—
<i>Deronectes assimilis</i> Payk.	A	B	C	A	—	C
„ <i>elegans</i> Panz.	A	—	C	A	—	—
„ <i>12-pustulatus</i> Oliv.	—	—	C	A	—	C
<i>Oreodytes halensis</i> Fab.	A	—	C	A	—	—
„ <i>rivalis</i> Gyll.	—	—	C	—	—	—
<i>Hydroporus pictus</i> Fab.	A	B	C	A	—	—
„ <i>granularis</i> Linn.	A	—	C	A	—	C
„ <i>lepidus</i> Oliv.	A	B	C	A	—	C
„ <i>dorsalis</i> Fab.	—	—	C	—	—	—
„ <i>lineatus</i> Fab.	A	B	C	A	—	—
„ <i>umbrosus</i> Gyll.	—	B	C	—	—	—
„ <i>angustatus</i> Sturm	A	—	C	A	—	—
„ <i>gyllenhali</i> Schiodte	—	B	C	A	—	—
„ <i>striola</i> Gyll. (<i>vittula</i> Er.)	—	—	C	—	—	—
„ <i>palustris</i> Linn.	A	—	C	A	—	C
„ <i>erythrocephalus</i> Linn.	A	B	C	A	—	—
„ <i>memnonius</i> Nic.	—	—	C	A	B	C
„ <i>obscurus</i> Sturm	—	—	C	—	—	—
„ <i>nigrita</i> Fab.	—	B	C	—	—	—
„ <i>discretus</i> Fairm.	—	B	C	—	—	—
„ <i>pubescens</i> Gyll.	—	—	C	A	—	—
„ <i>planus</i> Fab.	A	B	C	A	—	C
„ <i>tessellatus</i> Drap. (<i>lituratus</i> Brullé)	—	—	C	A	—	C
<i>Agabus guttatus</i> Payk.	—	—	C	—	—	—
„ <i>paludosus</i> Fab.	A	—	C	—	B	—
„ <i>didymus</i> Oliv.	—	—	C	A	—	—
„ <i>nebulosus</i> Forst.	A	—	C	A	—	C
„ <i>sturmi</i> Gyll.	A	—	C	A	—	C

		Lincolnshire.	
		North.	South.
„	<i>chalconatus</i> Panz.	A — —	— — —
„	„ Brit. auctt.	— B C	— B C
„	<i>bipustulatus</i> Linn.	A — C	A — —
<i>Platambus</i>	<i>maculatus</i> Linn.	A — C	— — C
<i>Ilybius</i>	<i>fuliginosus</i> Fab.	— — C	A — —
„	<i>subaeneus</i> Er.	— B C	— — —
„	<i>fenestratus</i> Fab.	A B C	A — —
„	<i>ater</i> Deg.	A — C	A — —
„	<i>obscurus</i> Marsh.	A B C	A — —
<i>Copelatus</i>	<i>agilis</i> Fab.	A — C	A — —
<i>Rantus</i>	<i>gratii</i> Gyll.	A — C	— — —
„	<i>exsoletus</i> Forst.	— — C	A — C
„	<i>bistriatus</i> Bergstr. (?)	— — C	— — —
<i>Colymbetes</i>	<i>fuscus</i> Linn.	A — C	A — —
<i>Dytiscus</i>	<i>semisulcatus</i> Müll. (<i>punctulatus</i> Fab.)	— — C	A — —
„	<i>marginalis</i> Linn.	A — C	A — C
<i>Hydaticus</i>	<i>transversalis</i> Bergstr.	A — —	— — —
<i>Acilius</i>	<i>sulcatus</i> Linn.	— — C	— — C
<i>Gyrinus</i>	<i>natator</i> Linn. var. <i>substriatus</i> Steph.	A — C	A — C
„	<i>suffriani</i> Scriba	— — —	— — C
„	<i>marinus</i> Gyll.	— — C	— — —
„	<i>thomsoni</i> Zaitzev (<i>edwardsi</i> Sharp) ...	— — —	A — —
<i>Orectochilus</i>	<i>villosus</i> Müll.	A — —	— — —
<i>Hydrobius</i>	<i>fuscipes</i> Linn.	A — C	A — C
„	„ form <i>picicrus</i>	A — —	A — —
„	<i>oblongus</i> Herbst.	— — —	— — C
<i>Phylidrus</i>	<i>testaceus</i> Fab.	A B C	— — —
„	<i>maritimus</i> Thoms.	— B C	— — —
„	<i>frontalis</i> Er. (<i>nigricans</i> Zett.)	— B C	— — —
„	<i>coarctatus</i> Gredl.	— — C	— — —
<i>Cymbiodyta</i>	<i>ovalis</i> Thoms.	— — C	— — —
<i>Enochrus</i>	<i>bicolor</i> Gyll.	— B C	A — —
<i>Anacaena</i>	<i>globulus</i> Payk.	A — C	A — —
„	<i>limbata</i> Fab.	A — C	A — —
„	<i>bipustulata</i> Steph.	— B C	— — —
<i>Helochares</i>	<i>lividus</i> Brit. auctt.	— — C	A — C
<i>Laccobius</i>	<i>nigriceps</i> Thoms.	— B C	— — —
„	<i>oblongus</i> Gorham	A — —	A — —
„	<i>alutaceus</i> Thoms.	A B C	A — —
„	<i>minutus</i> Linn.	— — C	— — C
„	<i>biguttatus</i> Gerh.		
	(<i>bipunctatus</i> Brit. auctt.)	A — C	A — —
<i>Berosus</i>	<i>luridus</i> Linn.	— — C	— — —
„	<i>affinis</i> Brullé	— — C	— — —
<i>Limnebius</i>	<i>truncatellus</i> Thunb.	A B C	A — C
„	<i>papposus</i> Muls.	A B C	A — —
„	<i>nitidus</i> Marsh.	— B C	A — —
<i>Chaetarthria</i>	<i>seminulum</i> Herbst.	— — C	— — C
<i>Helophorus</i>	<i>rugosus</i> Oliv.	— B C	— — —
„	<i>nubilus</i> Fab.	— — C	— — C

		Lincolnshire.			
		North.		South.	
„	<i>aquaticus</i> Linn.	A	— C	—	—
„	<i>4-signatus</i> Bach	—	—* C	—	—
„	<i>viridicollis</i> Steph.	A	— C	—	—
„	<i>mulsanti</i> Rye	—	— C	—	—
„	<i>affinis-griseus</i> complex	A	— C	A	—
„	<i>brevipalpis</i> Bedel	A	B C	A	— C
„	<i>nanus</i> Sturm	—	B C	—	—
<i>Hydrochus</i>	<i>brevis</i> Herbst	—	B C	—	—
„	<i>elongatus</i> Schall.	—	— C	—	—
„	<i>carinatus</i> Germ.	—	— C	—	—
<i>Octhebius</i>	<i>marinus</i> Payk.	—	B C	—	—
„	<i>impressus</i> Marsh. (<i>pygmaeus</i> Brit. auctt.)	A	B C	A	—
„	<i>bicolon</i> Germ.	—	— C	—	—
„	<i>auriculatus</i> Rey	—	B C	—	—
„	<i>aeratus</i> Steph.	—	B C	—	—
<i>Hydraena</i>	<i>riparia</i> Kug.	A	B C	A	—

The following bibliography includes all the references to Lincolnshire water-beetles that I have been able to find and also any other references mentioned in this paper. In a few cases, the author mentioned in the bibliography is not the actual author of the contribution but the individual responsible for the naming of the water-beetles mentioned.

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Hook Place, Burgess Hill, Sussex.

August 29th, 1938.

Plate I—a correction.—Plate I, illustrating the Bromeliad *Brocchinia micrantha*, is reissued herewith, and should be substituted for the Plate in the Magazine for September, which was unfortunately printed in an inverted position.—EDS.

Prionus coriarius and *Sirex gigas* in Herefordshire.—It may be of interest to record that I have obtained two specimens of *Prionus coriarius* at Treago recently—one was in the garage yard and the other by the keeper's house where a kitten was playing with it. I think I have also seen the beetle flying, but was not successful in capturing it myself, but I hope to do so yet. I also found a beautiful specimen of *Sirex gigas* on the window here in the middle of July.—R. W. LLOYD, Treago Castle, St. Weonard's, Hereford: August 28th, 1938.

An additional English record for the Water-bug Aphelochirus aestivalis F.—E. A. Butler, in his 'Biology of the British Hemiptera-Heteroptera,' gives seven English county-records for this curious insect: Notts, Norfolk, Northants, Warwick, Oxford, Berks and Somerset, with Worcester as a doubtful eighth. In this Magazine* and elsewhere† I have reported its occurrence in Wilts North, Hants South, Yorks South-East, Salop, and Tipperary South as well. I have now to record the taking of two immature specimens on 2.ix.38 in an overflow stream coming from Burton Park Lake, near Duncton, Sussex West, and running into the river Rother, which is not far away. This is therefore, by a few miles, the most southerly record for the *Aphelochirus* in the British Isles; and, within my experience, in the fastest-flowing habitat that I have yet found it. Butler also records its occurrence in Lough Neagh, Northern Ireland. I have not yet come across any other published records for the British Isles, but I may well have overlooked them. The species clearly has a wide distribution, but

* December, 1928, pp. 275-6; November, 1931, pp. 249-50.

† The Naturalist, September, 1937, p. 212; Journal Soc. Brit. Ent., Vol. I, pt. 8, 1938, p. 228.

seems local and difficult to find. The stream at Duncton, though productive in appearance, had a very meagre insect fauna on the date of my visit—no *Deronectes*, and only a single *Brychius*, and *Hydraena*.—E. J. PEARCE, House of the Resurrection, Mirfield, Yorks: September 9th, 1938.

Andrena humilis and *Picris hieracioides*.—This record is now published because the area visited for the last two years will shortly be covered by a mushroom growth of unsightly dwellings, and will no longer be available for collecting.

The locality lies between the extreme west end of Worthing and the Holm Oak Wood that comes right down to the beach somewhere near Goring-on-Sea. No part of it is more than a quarter of a mile from the shore.

On June 14th, 1937, a mixed colony of *Andrena humilis* Imh. and *A. flavipes* Panz. some twenty yards long was observed on a bank of stiff gravel facing south and only a short distance from high-tide mark. The parasite of *A. humilis*, *Nomada stigma* Fab. (*ferruginata*), was even more abundant than its host. Both these bees were visiting the flowers of *Picris hieracioides*.

This year, on the same date, the locality was visited at 9.30 a.m. in bright sunshine. Both sexes of *A. humilis* were very abundant in the restricted area where *Picris* grew, which nearly coincided with the extent of the colony itself. The ♂♂ were flying wildly about and trying to copulate with the already fertilised ♀♀. *Nomada stigma* was not nearly so common as in the previous year.

In 1937, despite a long and careful search, only two males of *A. humilis* could be found, and the correspondingly numerous parasites may probably have accounted for it. The numbers of females during the two seasons appeared to be the same. It is strange if the *Nomadas* of 1936 only attacked the cells destined to produce male *Andrenas*, yet it is not likely that that sex was really present though unobserved. This year, when the female bees were in the same fine condition the males were everywhere near the colony; none were observed further afield.

A. humilis was seen only visiting the flowers of *Picris hieracioides*. The bees were working with extraordinary rapidity, gathering pollen and nectar with a feverish haste and then dashing on to the next flower almost with the speed of an *Anthophora*. The contrast between the leisurely behaviour of *A. flavipes* and the rush and bustle of *A. humilis* on the same flower heads was most marked, but *flavipes* was also attracted to other plants, particularly yellow Crucifers.

The fields and hedges along the coast were next explored and yielded thirty-one species of Aculeates. In the back garden of a deserted cottage both sexes of *Andrena synadelpha* Perk. were flying round a flowering Laburnum. Isolated bushes of hawthorn were swarming with common *Andrenas*, amongst which were a few ♀♀ and many ♂♂ of *Andrena helvola* (Lin.). Two ♀♀ of *Andrena niveata* Friese and a single ♀ of *Andrena armata* (Gm.) were taken in a field. The best capture of the day was *Odynerus melanocephalus* (Gm.); four ♂♂ were discovered quietly crawling about a hawthorn bush that was not in flower.

At about one o'clock, on re-passing the *humilis* colony, it was seen that every flower head of *Picris* was closed, even though the sun had been for the most part shining. This presumably was the reason for the remarkable display

of activity of *A. humilis*. The bee had now practically vanished, except for a few coursing males. Nowhere else was the species seen except in the restricted area of some thirty square yards.

'An Introduction to the Study of Plants,' by Fitch and Salisbury, contains this remark about the 'sleep-movements' of flowers, including Composites: 'The advantage of all these movements lies in the protection of stamens and stigma at times when the pollinating insects are not flying.' This statement cannot apply to *Picris hieracioides* because the flight period of the *Andrenas* and *Halicti*, which are the primary fertilising agents, continues normally until about 4.30 p.m., and *Diptera* and *Coleoptera* are active long after this. Thus, on a fine sunny morning, except for an occasional cloud, *Picris* had closed by one o'clock, when most of the *Andrenas* and *Halicti* were still busy. In this instance *Andrena humilis*, the most frequent visitor to *Picris*, had disappeared, not because its normal flight period was over, but because its pollen and nectar supply was no longer available. On other occasions this flower has been observed well open late into the afternoon. It seems more likely that the diurnal 'sleep-movements' of yellow daisies are governed by atmospheric or other conditions, not necessarily always by light intensity either. That is a question for the botanist to decide.

In July this year *A. humilis* was found again at Byfleet visiting dandelions and buttercups (once in the late afternoon), but the pollen-gathering was slow compared with that of the Worthing individuals.

The relationship between the *Andrena* and *Picris* seems interesting and possibly raises the question of instinct or intuition on the bee's part; somehow it seemed aware that the time for gathering at the yellow daisy was very limited and so it worked harder in consequence.—K. M. GUICHARD, 10 Lyndhurst Gardens, Hampstead, N.W.3: August 22nd, 1938.

Review.

'THE GENITALIA OF THE BRITISH PYRALES WITH THE DELTOIDS AND PLUMES.'
By F. N. PIERCE, F.R.E.S., and the Rev. J. W. METCALFE, M.A., F.R.E.S.
9½ × 6 ins., pp. xiii + 89, Frontispiece and Plates I—XXIX. Oundle,
Northants: F. N. Pierce, The Old Rectory, Warmington. 1938.

We welcome yet another volume, the fifth in succession, of the outstanding work on the genital apparatus of the British Lepidoptera, by these two well-known authorities, one of whom, in fact, can now look back on fifty years of intensive study and research in this difficult but highly important subject. The present work, which is on the same lines as the four preceding volumes, deals with the genitalia of the British Pyrales, including the specially interesting 'Plume-moths,' and with those of the Deltoids; the genital structure of this latter group showing its members to be true Noctuae closely related to the Agrotids. Several new species are indicated, of which the most remarkable are the two forms of undistinguishable wing-pattern, separated on structural characters from the rare *Crambus craterellus* Scop. The twenty-nine plates, in which the majority of the figures are reproduced from the drawings by the Rev. J. W. Metcalfe, fully maintain the high standard of ample detail and accuracy manifested in those of the preceding volumes; and we may look forward to the appearance in due course of a work on similar lines by the joint authors on the larger moths familiarly known as the 'Bombyces.'

Society.

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held on July 21st, 1938, at 'Woodhouse,' Stroud, Dr. Harry Eltringham in the Chair.

Members present in addition to the Chairman: Mr. H. Willoughby Ellis, Mr. Jas. E. Collin, Mr. W. Rait-Smith. Visitors present: Professor G. D. Hale Carpenter, Mr. T. Bainbrigge Fletcher, Mr. H. W. Holloway, Dr. Sheffield Neave, Sir Edward B. Poulton, Mr. Austin Richardson, Mr. C. J. Wainwright.

The guests arrived by train and car during the morning in time to enjoy the floral prospect of the gardens which, notwithstanding the inclement season, presented a gay scheme of colour.

Luncheon was served at 1 o'clock, the items on the menu being enumerated in the Chairman's special Latin. The humour of these 'original descriptions' greatly amused the gathering. After luncheon Sir Edward B. Poulton said that his friend Canon St. Aubyn Rogers had taken advantage of the Air-mail to send him on July 4th last, five living pupae of *Papilio dardanus* together with their female parent, of the form *cenea*. The box arrived about July 12th and as the Hope Department was unusually cold for the time of year, Professor Hale Carpenter had taken them to warmer quarters in his house. That very morning he found that the first of these had most tactfully emerged over night so as to be ready to appear at the Club Meeting. It was a female of the form *hippocoon* and was the first living specimen of *dardanus* to be seen in England. Its behaviour was most ingratiating, fanning its wings not violently, but just so that the members and their friends could see the pattern favourably.

After luncheon a meeting of the Club was held, during which Dr. Sheffield Neave and Dr. Richard Armstrong were elected members of the Club.

The Chairman's very complete and interesting laboratory and some of his current work attracted many of the Company. During the afternoon, in delightfully fine and warm weather, motor trips were arranged through the adjacent beautiful Cotswold country, where the panorama of the valley of the Severn and the estuary of the river in the far distance were clearly seen and much admired. The visitors who could not remain left before dinner; those who were able to stay the night were entertained by Dr. and Miss Eltringham and left during the next morning. A most happy and entertaining meeting.—H. WILLOUGHBY ELLIS, *Hon. Secretary*.

SOME HOMOPTERA NEW TO THE BRITISH LIST.

BY W. E. CHINA, M.A.

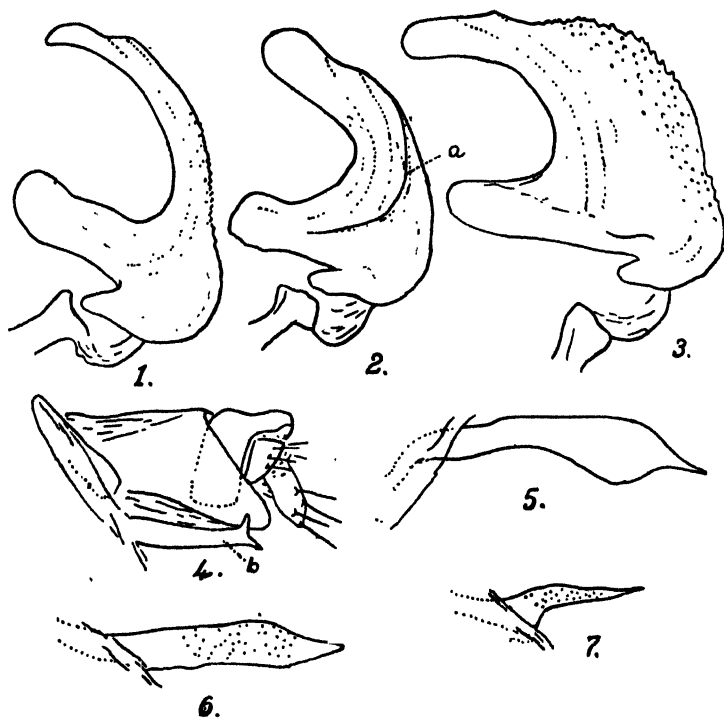
On page 191 *et seq.* of this Magazine, I have published a list of corrections and additions to the British List of Homoptera. The species newly recorded therein are now described for the first time in a British Journal. It is to be hoped that these descriptions will enable British collectors to identify the species and so add to our knowledge of their distribution in this country. My thanks are due to Messrs. Daltry and P. Harwood for bringing several species to my notice.

1. *Agallia laevis* Rib. and 2. *Agallia aspera* Rib.

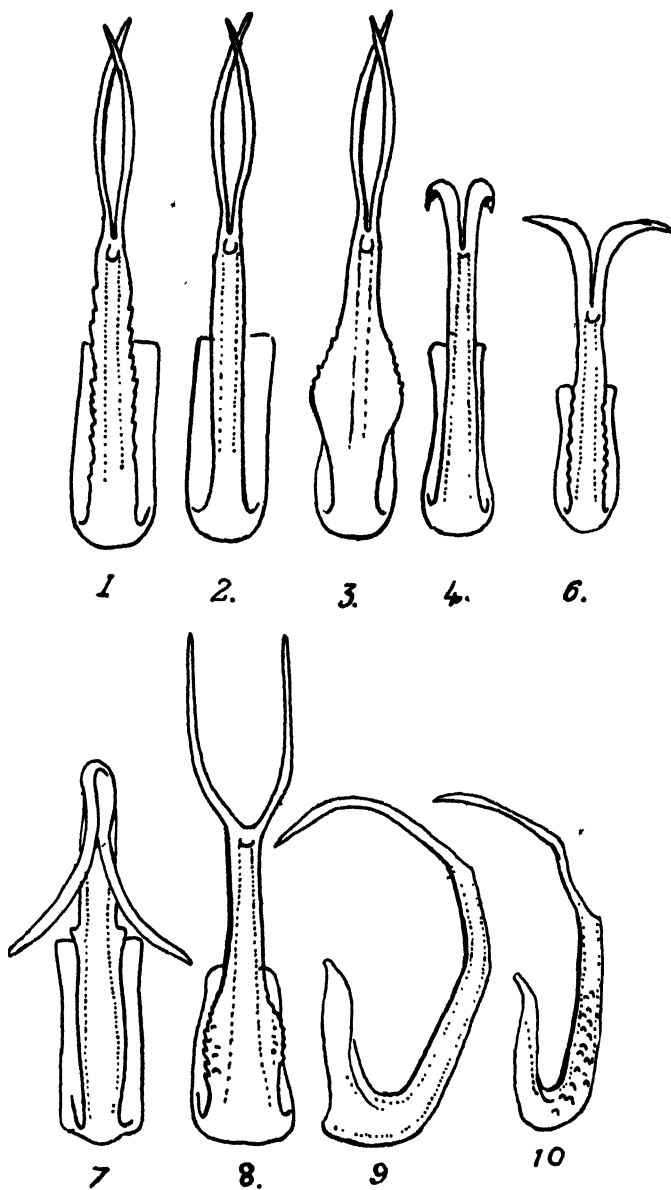
In the Bull. Soc. Hist. Nat. Toulouse LXVII, 1935, Dr. H. Ribaut split up *Agallia venosa* (Fall.) into four species based on

the structure of the male genitalia and the appendages of the anal tube. Three of these, *A. venosa* (Fall.), *A. laevis* Rib. and *A. aspera* Rib., he records from Britain. It is probable that a study of British material on these lines might reveal still further species. In the meantime these three species are best separated by reference to Ribaut's figures given herewith. Apparently *A. laevis* Rib. and *A. aspera* Rib. cannot be distinguished except by means of the genital characters, but according to Ribaut *A. venosa* (Fall.) may be distinguished from both these species by the rugosity of the tegmina which is equally pronounced on the discal cells as at the extremity of the clavus, and by the veins of the corium being more irregularly delimited and bordered with punctures even some distance from the base of the tegmen.

Agallia laevis Rib. was recorded from Wales (Pendine IX, 1907, coll. E. A. Butler, *vide* Ribaut).



TEXT FIGURE 1.—Penis in left lateral view: 1, *Agallia venosa* (Fall.); 2, *Agallia laevis* Rib., showing lateral ridge (a); 3, *Agallia aspera* Rib.; 4, Anal block of *Agallia venosa* (Fall.), showing left appendage (b) of anal collar; 5, Left appendage of anal collar of *Agallia laevis* Rib.; 6 and 7, Left appendage of *Agallia aspera* Rib., showing the range of individual variation. (All figures after Ribaut.)



TEXT FIGURE 2.—1, *Macrosteles fieberi* Edw., penis in full view; 2, *M. salinus* Reut., same; 3, *M. lividus* Edw., same; 4, *M. laevis* Rib., same (extremity foreshortened); 5, *M. sexnotatus* Fall., same (extremity foreshortened); 6, *M. horvathi* Wagner, same; 7, *M. viridigriseus* Edw., same; 8, *M. laevis* Rib., lateral view of penis; 9, *M. sexnotatus* Fall., same. (All figures after Ribaut).

Agallia aspera Ribaut was recorded from England (Oxfordshire, Chiltern Hill, VIII, 1918, coll. E. A. Butler, *vide* Ribaut).

Agallia venosa (Fall.) typical form was recorded from Scotland (Norman coll. 23-6 *vide* Ribaut).

3. *Aphrodes bicinctus* Schrk. var. *obtusifrons* Kbm.

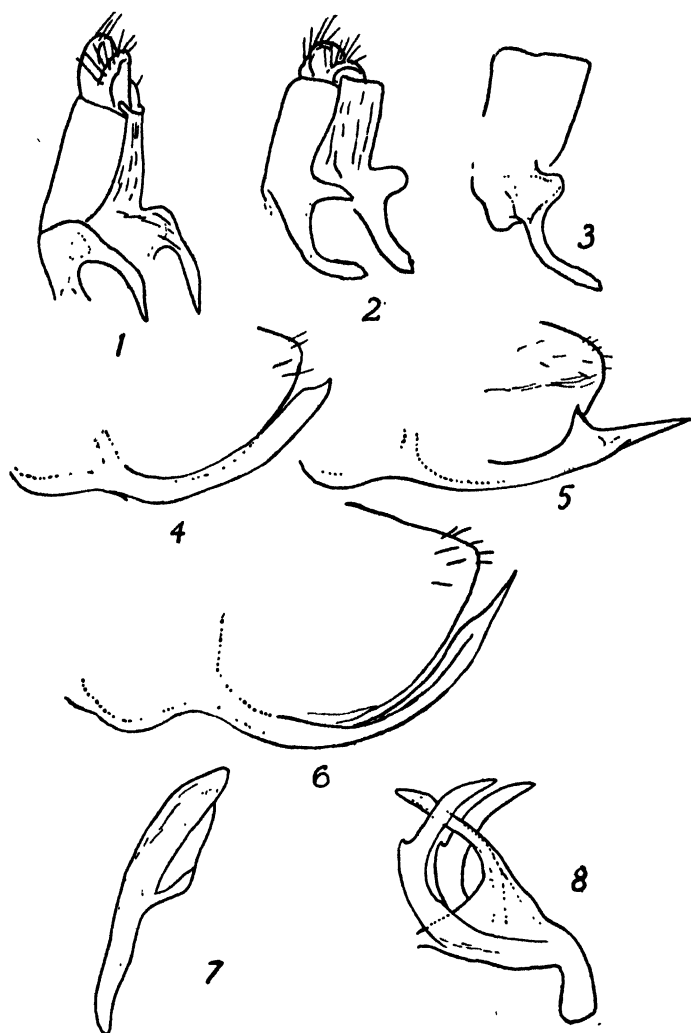
This variety of a variable species is easily distinguished from the typical form by its smaller size, apically 'rounded instead of angular vertex, much less distinctly marked head and pronotum in the male. The genitalia are identical in the two forms. British specimens have been identified by Dr. Ribaut.

4. *Macrosteles salinus* Reut.

This species has not previously been recorded from Britain. Several specimens were taken by Mr. H. W. Daltry in a salt-marsh at Neston, Wirral, Cheshire, on June 29th, 1936. These were identified by Dr. H. Ribaut as *Cicadula salina* Reut. This species was originally described as a variety of *Cicadula sexnotata* and belongs to that group of species. These latter are distinguished by the structure of the aedeagus. This organ in *Macrosteles salinus* Reut. strongly resembles that of *M. fieberi* Edw. and differs only in the smooth non-serrated sides of the penis shaft. The anterior processes cross one another at the tip just as do those of *M. fieberi*; (*M. lividus* Edw. which is regarded by Wagner as a variety of *M. fieberi* Edw. has the sides of the penis shaft dilated as well as serrate). These three species are thus closely allied and might be regarded as forms of the same species. The difference between them is best shown in the accompanying text-figure 2 which includes a similar view of the penis of all the species in the *sexnotata* group at present known from Britain. In the case of the very similar *M. sexnotatus* and *M. laevis*, the lateral view of the penis is also given. Note also the tuberculate shaft in *sexnotatus* as opposed to the smooth shaft in *laevis*.

5. *Empoasca decipiens* Paoli and 6. *E. pteridis* Dahlb.
(= *tulgreni* Rib.).

Judging by British Museum material and according to Ribaut's figures the species formerly determined by Edwards as *Chlorita viridula* Fall. is actually composed of the above two species. The true *viridula* Fall. is not definitely known to occur in Britain, although it may well do so. These two species both run down to *viridula* in Edwards' key but differ from one another in the structure of the anal tube and genitalia. The differences are best



TEXT FIGURE 3.—1, *Empoasca flavescens* F., anal block showing paired processes; 2, *E. pteridis* Dahlb., same; 3, *E. decipiens* Paoli, same; 4, *E. flavescens* F., left lobe of pygophor showing ventral appendage; 5, *E. pteridis* Dahlb., same; 6, *E. decipiens* Paoli, same; 7, *E. decipiens* Paoli, lateral view of penis; 8, *E. viridula* Fall., same. (All figures after Ribaut.)

appreciated by a study of text-fig. 3. Both *E. decipiens* Paoli and *E. pteridis* Dahlb. belong to the *E. flavescens* F. group in the males of which the paired processes of the anal tube are short and feebly developed (text-fig. 3, Nos. 1-3) and the lobes of the pygophor are furnished with long appendages on their ventral margins (text-fig. 3, Nos. 4-6).

In *E. viridula* the free part of the penis is composed of three branches (text-fig. 3, No. 8), whereas in *E. decipiens* and *E. pteridis* Dahlb. it is simple (text-fig. 3, No. 7).

7. *Typhlocyba staminata* Ribaut.

In the E.M.M. for April, 1928, pp. 80-83, Edwards gave a key to the British species of *Typhlocyba* (= *Anomia* Edw.). On page 83, sect. 33, with regard to *avellanae* Edw. he wrote: 'The stem of the aedeagus sometimes bears on each side just below the appendage an extremely slender acicular process almost two-thirds as long as the appendage and following an almost similar curve, but this supplementary process is often reduced to a mere stump.' Ribaut has now shown (Bull. Soc. Hist. Nat. Toulouse, LXI, p. 334, figs. 1-4, 1931) that this form represents a distinct species and has named it *staminata* Ribaut. In addition to the above supplementary process the anterior appendages form an ogive rather than a semi-circle, and the lobes of the pygophor are provided with only three bristles at the base and two or three hairs on the posterior margin. Occurs on hazel.

8. *Erythroneura ribauti* Ossiannilsson and ♀. *E. parvula* Boh.

E. ribauti Oss. is the *E. parvula* of Ribaut nec Boh. There has been considerable confusion over *E. parvula* auct. In 1924 Edwards separated *E. pallidifrons* Edwards from the original composite species. In 1932 I stated (in MacGill, Bull. Ent. Res. XXIII, Pt. I, March 1932, p. 34) that there was no authentic British male specimen of *E. parvula* Boh. on record and figured an Austrian male. When Ribaut's 1931 paper (Bull. Soc. Hist. Nat. Toulouse LXII, p. 404) came to my notice I realised that this Austrian specimen was identical with his *E. disjuncta*. Since then Ossiannilsson has shown (Opusc. Ent. 1937, p. 25) that *E. disjuncta* Rib. is the true *E. parvula* Boh. (thereby confirming my 1932 determination) and that Ribaut's *E. parvula* is a new species which he (Ossiannilsson) has called *E. ribauti* Oss. Both these species occur in Britain. In January of this year Mr. H. W. Daltry submitted to me specimens of *E. disjuncta* Ribaut which he had been collecting on *Helianthemum* in chalky districts. These were of course readily identified by the use of Ribaut's excellent figures. Meanwhile Mr. P. Harwood had been collecting on oaks in the New Forest, another allied species. Unfortunately no males were taken but from the distinctive tegminal colour-pattern this species was identified at once as *E. parvula* Ribaut. This of course is now

E. ribauti Oss. Males of *E. parvula* Boh. (= *disjuncta* Rib.) collected by Mr. Daltry are now available, but no British males of *E. ribauti* are yet known. Dr. Ribaut has expressed the opinion that we should wait until males are found before establishing the species as British. It is essential however to draw the attention of collectors to the new species if we are to obtain males. An examination of the British Museum material showed that both species had been present in the collections for many years under the name *E. parvula*, but unfortunately many of the Douglas and Scott specimens bore no locality labels. The distribution according to the British Museum material is as follows:—

E. ribauti Oss:—Surrey: Shere VIII, 1899, E. A. Butler. Essex: Epping Forest 8.x.1910, E. A. Butler; Loughton 23.iv.1909, E. A. Butler; High Beech ix.1907, E. A. Butler. Both Mr. Harwood and Mr. Daltry have taken this species on oaks in the New Forest, the latter on 6.x.1937.

E. ribauti probably hibernates as an adult.

E. parvula Boh.:—Gloucester: Colesborne 28.ix.1907, J. Edwards. Surrey: Shere viii.1892, E. A. Butler; Box Hill, H. W. Daltry. Dorset: Poole Harbour viii.1904, E. A. Butler; Blandford, Handley and Swanage, P. Harwood. Carmarthenshire: Pendine ix.1907, E. A. Butler. Hants: New Forest, P. Harwood. Essex: Chingford x.1890, E. A. Butler; High Beech ix.1907, E. A. Butler. Staffs: Dovedale, H. W. Daltry. Kent: Folkestone Warren and Kingsdown, near Deal, H. W. Daltry.

E. parvula is distinctly smaller than *E. ribauti*. The two species are readily distinguished by the colour-pattern, apart from well-marked differences in the male genitalia. *E. ribauti* has a distinct orange-yellow or brick-red shading on head, pronotum, margins of scutellum, costal margin and apical nervures of tegmina, whereas in *E. parvula* the shadings are lemon-yellow. The apical nervures in *parvula* are unicolourous save for some slight apical infuscation. Reference should be made to text-fig. 4.

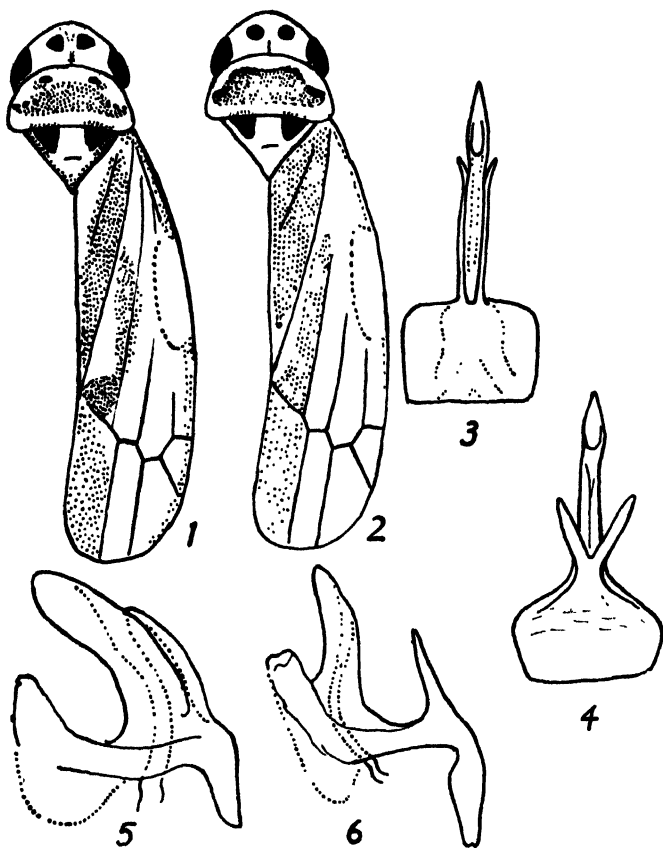
10. *Erythroneura ordinaria* Ribaut.

Faune de France 31, Homopt. Auchen. 1, Typhlocyidae, 1936, p. 47.

Very similar to *E. tiliae* (Geoff.). The males can be easily distinguished by the colour and relative length of the posterior tarsi. In the male of *E. tiliae* the posterior tarsi are as long or longer

than half the corresponding tibia and all three segments are black. In the male of *E. ordinaria* the posterior tarsi are shorter than half the corresponding tibia and are only black on the apical segment and the extremity of the preceding segment.

Occurs on willow.



TEXT FIGURE 4.—*Erythroneura ribauti* Oss. : 1, Dorsal view to show colour pattern ; 3, Posterior view of penis ; 5, lateral view of same. *Erythroneura parvula* Boh. : 2, Dorsal view to show colour pattern ; 4, Posterior view of penis ; 6, Lateral view of same.

11. *Megamelus paludicola* Lindb.

(=*Megamelus brevifrons* Haupt nec Reut.)

In January of this year Mr. H. W. Daltry submitted to me a short series of specimens of a strange-looking *Megamelus* species which Mr. P. Harwood had recently collected in the New Forest, It was identified as *Megamelus brevifrons* Reut. from Haupt's

'Zikaden' of Die Tierwelt Mitteleuropas. This was confirmed by Dr. H. Ribaut who pointed out that Lindberg had recently shown that Haupt's species was distinct from Reuter's and had renamed it *M. paludicola* (Not. Ent. XVII, p. 59, 1937). This species is of course new to Britain. It is allied to *M. venosus* Germ. (= *thoulessi* Edw.) which was formerly placed in the British List under *Liburnia*, but differs in the following manner:—

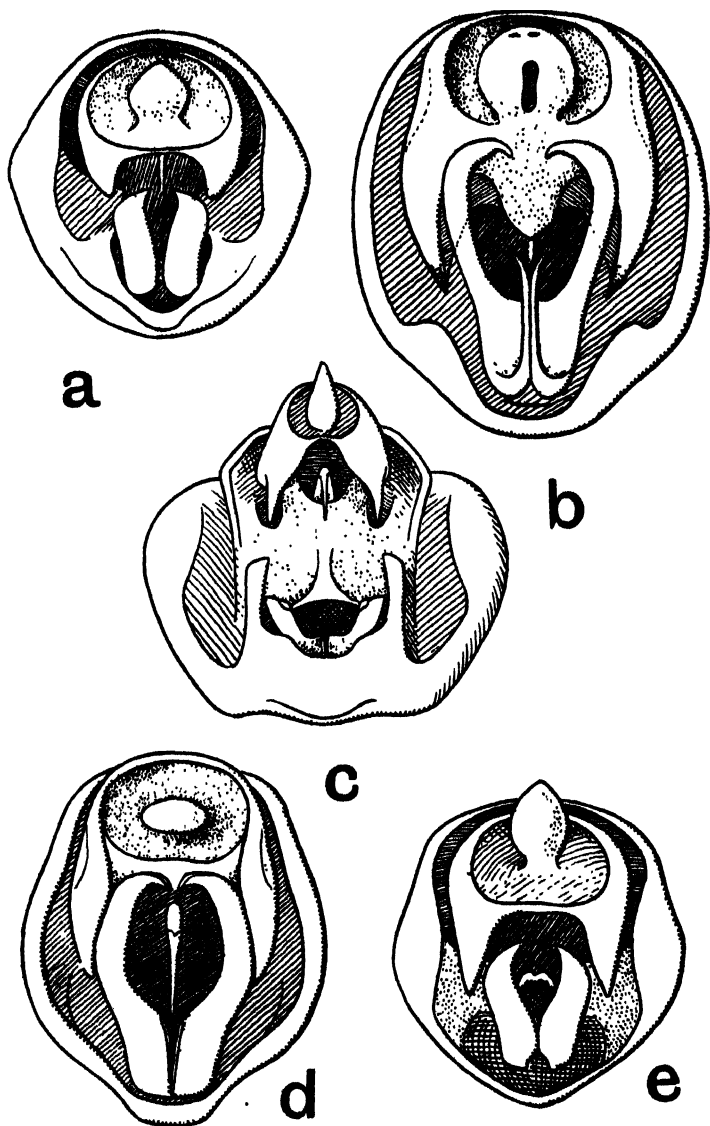
The first antennal segment is distinctly longer than wide at the end, the tegmina bear traces of markings, the tubercles on veins of tegmen give rise to hairs, and the anal tube has distinct spurs (text fig. 5, e). The British species of *Megamelus* may now be separated as follows:—

Megamelus Fieb.

Side keels of pronotum straight, reaching or nearly reaching the hind margin, not curving away laterally behind eye. Frons with one median keel. Basal antennal segment at least half as long as second. Head seen from above moderately elongate. Basal segment of hind tarsi longer than the other two together. Apex of mesonotum acute, not at all rounded or tumid.

1. Side keels of pronotum barely reaching the posterior margin, posteriorly strongly divergent, the distance between their posterior extremities much longer than the middle carina. Head seen from above feebly produced in front of eyes, the middle keel not anteriorly prominent ... 2.
- Side keels of pronotum reaching the posterior margin, posteriorly only moderately divergent, so that the distance between their posterior extremities is not or very slightly longer than the middle keel. Head seen from above distinctly produced in front of eyes with anteriorly projecting middle keel 4.
2. First antennal segment about as long as thick at its apex; tegmina unicolourous yellowish or reddish-brown without markings
..... *venosus* Germ. (= *thoulessi* Edw.).
- First antennal segment much longer than thick at the apex; tegmina with more or less distinct markings 3.
3. Tegminal nervures with tubercles bearing erect hairs; tegmina yellowish hyaline with a dark spot at apex of clavus and brown stripe down radial nervure *paludicola* Lindb. (= *brevifrons* Haupt.).
- Tegminal nervures without piliferous tubercles; tegmina brown, with a large obscure pallid spot in middle of claval area and two distinct whitish spots along apical margin *feberi* Scott.
4. Head from above twice as long as wide at base, whole insect dark brown with a broad distinct median pale yellow stripe extending from apex of head to tip of abdomen. Male pygophor with an ovate accessory lobe on each side *notula* Germ.
- Head from above less than twice as long as wide at base. Pale yellow median stripe indistinct; each tegmen with two dark brown spots, a large one at apex of clavus, another smaller in middle of apical margin, the claval commissure at base and the apical margin between the brown spots yellowish-white. Male pygophor without accessory lateral lobes *quadrifasciata* Sign.

The male genitalia of the five species are figured herewith.



TEXT FIGURE 5.—End view of pygophor, showing anal tube and parameres : (a) *Megamelus venosus* Germ. ; (b) *Megamelus 4-maculatus* Sign. ; (c) *Megamelus notula* Germ. ; (d) *Megamelus fieberi* Scott ; (e) *Megamelus paludicola* Lindb.

British Museum (Natural History),
Cromwell Road, London, S.W.7.
July 28th, 1938.

THE AQUATIC COLEOPTERA OF THE ENVIRONS OF PANNAL ASH,
NEAR HARROGATE. PART I.—HYDRADEPHAGA.

BY RAYMOND R. U. KAUFMANN.

INTRODUCTION.

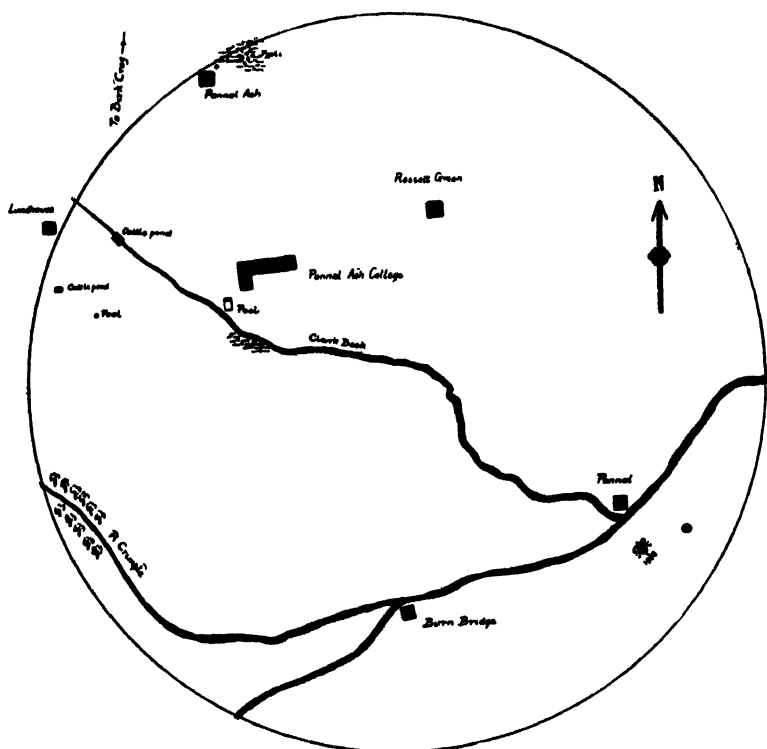
No attempt has as yet been made, to my knowledge, to collate an account of the aquatic Coleoptera of this district, and though it does not, perhaps, compare with such a classic hunting-ground as Askern Bog, near York, yet the variety of water beetles which occurs here is sufficiently comprehensive to deserve more than a passing note. In self-justification it should be added that whilst systematic dragging of many parts of the local streams and ponds has been undertaken by friends and myself during the course of the last six years, nevertheless no suggestion is here implied that the following list is either comprehensive or exhaustive: there is obviously a great deal of work still to be done.

Pannal Ash lies fully two miles south by west of Harrogate. The district stands at an elevation of roughly between 500-600 feet, and whilst the streams to be mentioned lie at the bottom of shallow valleys, the ponds generally are at a higher point. The accompanying map gives a reasonable conception of the region under discussion, and it will be noticed that it is but sparsely wooded. On it have been marked the principal villages, the position of the swimming pool at Pannal Ash College—the former is fed by the Harrogate main water supply, but the drainage leads to Clark Beck—and the various pools and cattle ponds visited. Some of the pools have been drained since they were first visited because of housing development, and one or two have dried naturally. The circle on the map indicates those parts of the two main streams which have been the most systematically inspected. It should be added that the river Crimble is more familiarly known in the district as the Pannal Beck.

The Clark Beck resolves into what is little more than a narrow ditch on the northern side; dams were erected at each end of the walled cattle pond shown, and the latter is paved on one side. The other cattle pond in this vicinity is also a walled and paved one, and lies to the west of a farm-house wall.

The Crimble is of course the main stream of the district, and whilst it is shallow throughout and can easily be forded except when it is in spate, the numerous bends are sometimes quite deep. Aquatic vegetation is very sparse, and the bed is made up principally of sand and stones. This description is equally applicable

to the Clark Beck in its wider parts, but the narrow northern end is rank with water-loving flora. The cattle pond which interrupts it has for its principal growth *Callitriche*. In the other cattle pond and the pools shown on the map floats Duckweed.



SKETCH MAP OF PANNAL ASH ENVIRONS.

Those parts of the Clark Beck lying within the limit of the circle and the main bend of the stream, and those portions of the Crimpe found between Burn Bridge and the west have been more thoroughly dragged than have the south-eastern regions.

HYDRADEPHAGOUS FAUNA OF THE PANNAL ASH DISTRICT.

Family HALIFLIDAE.

Brychius elevatus Panz.—By sweeping under the banks of the deeper parts of the Crimpe. A most uncommon species (vi).¹ According to the County History, my main source of information, this species is widely distributed throughout the county.

Haliphus ruficollis De Geer.—This species has occurred frequently to me in

¹ These figures denote month of capture.

the south, generally from swampy ponds, but I regard it as most uncommon here. One specimen only (vi) from the Crimble. It is reputedly common everywhere.

H. lineatocollis Mm.—Very uncommon (vi) both in the Crimble and Clark Beck. Apparently a somewhat localised but widely distributed species.

Family DYTISCIDÆ.

Laccophilus minutus L. (*interruptus* Panz.).—In cattle ponds and pools Uncommon (vi: A. R. Huntington).² A longer series occurred to me from a swampy pond at Birk Crag, which is not shown on the map, but which lies to the north-west of Pannal Ash. This appears to be a very local species.

Hyphydrus ovatus Linn.—Although reputedly abundant throughout the county, this species is rare here. So far it has only been taken at Birk Crag from a large quarry pool (vi) (x: P. Ariell-Wright).

Hygrotus inaequalis Fab.—In a small swampy pond at Birk Crag, where it was not uncommon (vi, x). It has not yet been captured nearer to Pannal Ash, although supposedly widely distributed throughout the county.

H. decoratus Gyll.—Not common. A short series was taken from the Crimble (vi), but its occurrence is unusual. Common in Askern Bog.

Coelambus confluent Fab.—Rare. One specimen only (vi), from a pond. This is regarded as a localised species.

Hydroporus striola Gyll. (*vittula* Er.).—A most uncommon species, occasionally found in ponds (vi) (x: W. M. Hird). It appears to be very local.

H. palustris Linn.—Abundant in the Clark Beck cattle pond and often taken in large numbers from the other ponds of the district. Quite the commonest insect to be found here (iv, v, vi). It occurs also in profusion at Birk Crag. Regarded as a common species throughout the county.

H. nigrita Fab.—A very common species in small ponds, to which it appears to be confined. The ponds in the neighbourhood of Pannal Ash proved to be the most profitable (iii: P. Ariell-Wright) (vi, x). Reputedly a very local and scarce species.

H. discretus Fairm.—Rare. From small ponds (v, x). Apparently a very local and rare species.

H. pubescens Gyll.—Very common in swampy ponds. One specimen was discovered hibernating in a dead leaf drift at the bottom of the swimming pool at the school (ii). Occurrence (iii: B. D. Owen, P. Ariell-Wright) (ii, iv, vi, xi). Also taken at Lundhouse (iv) and Birk Crag (vi), where it was rare. A widely distributed insect.

Agabus guttatus Payk.—Quite common in small ponds, and sometimes found in the Crimble. A long series was taken from under a large stone lying in a puddle of spring water in the western part of the school grounds (iv), and another series occurred in a narrow ditch holding barely any water and thick with vegetation (vi: H. J. Morley) (iv, vi, x, xi). Widely distributed throughout the county.

A. paludosus Fab.—An uncommon species which occasionally frequents the shallowest parts of the Clark Beck (vi, vii), where it shuffles into the mud if disturbed, and sometimes it is to be taken from ponds in the locality (iv). Regarded as a very local Yorkshire species.

A. congener Thunb.—From small ponds and sometimes the cattle pond in Clark Beck, but most uncommon (iv, vi). This is quoted as a rare insect.

A. nebulosus Forst.—Quite a common species here, taken from cattle ponds and small pools. One specimen came from a dead leaf drift in the swimming pool at the school (vi: *P. Ariell-Wright*) (ii, iv, vi, xi). Also from a small pond at Birk Crag (vi), where it was quite abundant. This appears to be a very local species.

Platambus maculatus Linn.—Extraordinarily profuse in the Crimble, where it congregated by the dozen under stones and at the shallow edges of the stream. The elytral maculations of this insect are of infinite variety, ranging from the type form to species with barely any distinguishing marks at all. I have one record (vi: *M. D. Howard*) from a pond. A very common and widely distributed water beetle, which occurs in 'streams west of Harrogate.'³

Ilybius fuliginosus Fab.—A common species in the Crimble, Clark Beck cattle pond and the other pools and ponds of the district (vi, vii). Very common and widely distributed throughout the county.

Agabus obscurus Marsh.—Common, but restricted to ponds and cattle pools (iv, vi, vii, viii, x). I have a record from Pannal (viii) and others from the pond at Birk Crag (vi). Locally common.

Colymbetes fuscus Linn.—Far less frequent than one might suppose. I found this to be a common river species in the south, but here it is quite rare. Specimens have sometimes been dragged for in the swimming pool at College (vi, vii), and one specimen was found hibernating in a dead leaf drift at the bottom of the bath (xi). Supposedly common throughout the county.

Dytiscus marginalis Linn.—A common insect in the slow-running Clark Beck and in cattle ponds and pools (ii, iv, vi). One specimen occurred in a ditch behind the school, with the water practically non-existent (vii: *H. G. Waddington*). This beetle often occurs in our swimming bath (vi: *N. J. Austin*).

Acilius sulcatus Linn.—Not uncommon in cattle ponds (vi) and also in the small pond at Birk Crag (vi). It has not yet occurred in Clark Beck, where it might reasonably be expected to turn up. Widely distributed throughout the county.

FAMILY GYRINIDAE.

Gyrinus natator Linn.—Very common on the surface of ponds, the school swimming bath, and the cattle pool in Clark Beck. As many as a dozen or more often career over the surface of these waters on sunny days (v, vi, vii). Also very common in the Birk Crag pond (vi). Very common and widely distributed throughout the county. 'Riccall and Pannal (*W. D. Roebuck*).'⁴

Orectochilus villosus Fab.—Two specimens occurred in the school baths one evening (vii: *R. L. Saunders*), but my long series are all entirely from the Crimble. They were taken from the underside of mossy stones, and, whilst this was not often, when they were discovered, they were generally in half-dozens or so (vi). Apparently widely distributed but not common.⁵

³ Cf. J. Murray: Coleoptera in Dumfriesshire (Ent. Mon. Mag., Vol. LXXIV, 3rd Series, No. 283, 1936).

CONCLUSIONS.

Since the foregoing list is hardly a long one, one may with some safety say that with further diligent searching new species to the district will occur, including, for example, such present

³ Rev. W. C. Hey: List of the Coleoptera of Yorkshire (Trans. Yorks. Nat. Union, Ser. D, Vol. 3, pt. 10, 1888).

⁴ Rev. W. C. Hey: List of the Coleoptera of Yorkshire (Trans. Yorks. Nat. Union, Ser. D, Vol. 3, pt. 16, 1891).

rarities as *Dytiscus semisulcatus* Kirby and additional *Hydroporini*. A widening, too, of the circle within which most of the species enumerated have been taken will probably result in a number of new finds. At Burn Bridge, to quote another instance, practically nothing has yet been attempted in the large mill dams that are there, but the time and opportunity for this have been impossible up to the present. *Colymbetes fuscus* again is a little problem, for it should certainly have been taken far more often than has been the case.

In the meantime, supplementary lists of the remaining aquatic Coleoptera will be prepared, and *interim* this may well give occasion for the recording of additional Hydradeephaga.

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Pannal Ash College,
 Harrogate, Yorkshire.
 July 14th, 1938.

A NEW SPECIES OF THE SPHECID GENUS *DIODONTUS* OCCURRING IN BRITAIN.

BY G. M. SPOONER, M.A.

The existence in this country of a second species of *Diodontus* with yellow mandibles, allied to *minutus* (F.), has been known for many years; but owing to its scarcity in collections and the uncertainty regarding the characters of the female sex, its true identity has remained in doubt. E. Saunders (1910) introduced the species to the British list as *D. friesei* Kohl—a North African form—on the strength of two males which had then recently been captured in Surrey, and three males of unknown locality from Shuckard's collection. These, with other males from Jersey, were characterised by having the intermediate basitarsus only feebly expanded at the apex, that joint appearing almost normal in contrast to its peculiar form in *minutus*.

Since that time little more has been heard of Saunders' supposed *friesei*. Dr. R. C. L. Perkins had informed me that he suspected its occurrence in the New Forest, and I now find that in his collection, housed in the Oxford Museum, three New Forest females had been separated from *minutus* under the other name. The male was rediscovered at Hampstead in 1925 by Dr. O. W. Richards. There have also been suspicions that Saunders' identification was at fault: F. D. Morice, for example, queried the name on labels in the British Museum collection and on one of his own specimens. Moreover, the occurrence of *friesei* in Western Europe has been ignored in the revised edition of Schmiedeknecht's keys for European Hymenoptera (1930). The two authenticated Western and Central European species of flavous-mandibled *Diodontus* have remained, as when Kohl published his work on Palaearctic species, the widespread *minutus* and the Austrian *major*.

It is at last, however, possible to give an adequate description of the problematical British species, based on specimens collected during the past few years in Dorset, on Southhaven Peninsula, near Studland. In this locality it has proved fairly common, burrowing in sandy banks on Bagshot Sand formation. A recent critical examination of a series of fifteen females (taken on various dates between June 13th and July 30th, 1930-37, and one on September 11th, 1938) revealed certain characteristics which in themselves were enough to suggest specific distinction from *minutus*, even if no males had been available to establish the point. The two males secured have proved identical with the actual specimens assigned to *friesei* by Saunders, and the females agree with those from the New Forest attributed to Saunders' species by Dr. Perkins.

Meanwhile reference to Kohl's descriptions and comparison with material in the British Museum collections revealed that both sexes differ in important respects from *friesei* (see below), and, as may well have been expected, cannot possibly be attributed to that Mediterranean species. It proves equally impossible to assign them to *major*, the only species of the group other than *minutus* previously known from temperate Europe. There appears, further, to be no other Mediterranean or W. Asiatic species with which the British specimens can be matched. It must evidently be regarded as new, and in the description which follows the name *insidiosus* is brought forward.

Useful additional material of *D. insidiosus* has been discovered in the collections at the British Museum and the Hope Museum,

Oxford: altogether 13 ♂♂ and 27 ♀♀ have been examined. The specific characters have been determined through a careful comparison with *minutus* and are described on that basis. Of the commoner species the material examined practically covers its whole range in Britain. It is interesting to notice that all four specimens which have survived from Shuckard's collection belong to *insidiosus*, and one of each sex was selected by Saunders as his type of *minutus*! Shuckard's description of *minutus* (1837, p. 185) also indicates that, for the female at least, he had *insidiosus* before him, since he states that the anterior tibiae have a black marking. Of twenty-seven of Saunders' own specimens the only example of *insidiosus* is a female originally given to V. R. Perkins as an example of *minutus*.

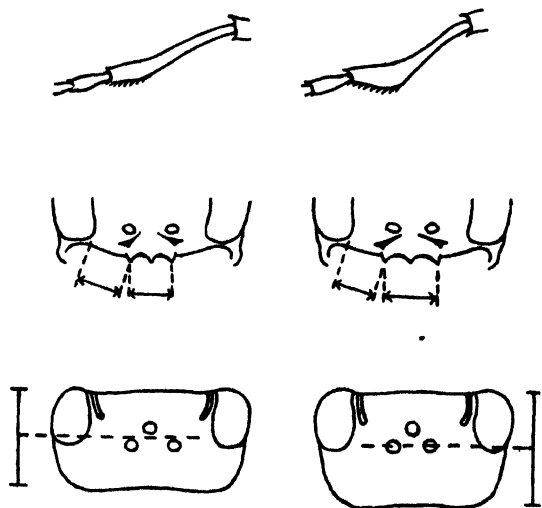


FIG. 1.—Specific distinctions between *Diodontus insidiosus* (left) and *D. minutus* (right). Above, intermediate basitarsus of male; centre, lower part of face of female showing spacing of the clypeal spines; below, outline of dorsal view of head of female.

***Diodontus insidiosus* sp. nov.**

Diodontus minutus Shuckard 1837, nec Fabricius.

Diodontus friesei ♂, E. Saunders 1910, nec Kohl 1901.

Description.

A small species with flavous mandibles, head and mesonotum with finely rugulose surface between the punctures, flagellum of

antenna in the male pale beneath, resembling *minutus* (F.) except for the following distinctions:—

♂. Intermediate basitarsus as in *D. friesei*: gently curved, and slightly but gradually widened towards the apex (not abruptly and strongly expanded as in *minutus*) (Fig. 1).

Tibiae with black markings: anterior and intermediate tibiae with a black mark posteriorly; posterior tibiae mainly black, only the base and apex testaceous or, more rarely, flavous. (In *minutus* the tibiae are mainly, often entirely, flavous: at most the areas black in *insidiosus* are somewhat infuscated, and sometimes the posterior tibiae are black centrally.)

Antennal joints broader: the third joint almost square in outline anteriorly, and rather shorter relative to the fourth than in *minutus*.

Punctures on the upper part of the face on the whole firmer and more clearly differentiated on the rugulose surface.

Angle between the ocelli obtuse: in *minutus* the angle is variable, but is typically a right-angle or acute.

Propodaeum posteriorly with more irregular sculpture, lacking the well-defined reticulation of *minutus* and other species.

♀. Clypeus with spines of anterior margin more closely approximated: distance between the two outer spines somewhat less than that between one of them and the margin of the neighbouring eye: in *minutus* the former tends to be greater (Fig. 1).

Legs darker: anterior tibiae flavous with a black spot posteriorly; intermediate tibiae usually mainly black, but the testaceous area of the apex and base may extend the whole length of the anterior surface; intermediate basitarsi usually black; posterior tibiae black, at most testaceous at apex and base. (In *minutus* anterior tibiae often entirely pale; intermediate and posterior tibiae pale, with a variable amount of darkening centrally; intermediate basitarsi wholly, or at least partly, testaceous. Darkest specimens hardly differ from the palest of *insidiosus*, but there is considerable difference in the average condition.)

Temples somewhat narrower. When the head is viewed from above (Fig. 1) a line equidistant from the anterior and posterior margins passes between the ocelli, whereas in *minutus* it passes through the posterior ocelli; median width of vertex is not greater than half the breadth across the eyes.

Posterior ocelli wider apart: the distance between their mid-points approximately equals that between one of them and the margin of the neighbouring eye (in *minutus* this distance is decidedly less).

Punctures on the head stronger, particularly on the face between the eyes.

Propodaeum on posterior face appears smoother: the reticulations are ill-defined instead of forming a distinct closed network; irregular ridges tend to radiate from the central depression.

Size more uniform, on average smaller, not attaining the upper limit of the more variable *minutus*.

Type. Two of the ♀♀ from Southhaven, Dorset (24.vii.33 and 13.vi.34), have been deposited in the British Museum as type specimens.

Distribution.

In Britain known from Surrey (Chobham, Oxshott), Hants

(New Forest), Dorset (Southaven Peninsula), Middlesex (Hampstead Heath), Kent (Deal), and Sussex (Seaford). It appears to be confined to these south-eastern counties, frequenting sandy habitats on the Tertiary heaths and, more rarely, on the coast. This range resembles, for example, that of *Halictus perkinsi* and the genus *Miscophus*. In Surrey it is evidently much scarcer than *minutus*. There, and in the New Forest, the two species probably occur together. In Dorset, curiously, neither species has been recorded from the whole extent of the Tertiary heath area, with the exception of the occurrence of *D. insidiosus* in the S.E. corner near Studland: *minutus* is plentiful locally in the county, but only on the coast. The records for Kent and Sussex are based on single females taken last century. It is perhaps remarkable that such a considerable proportion of the species should occur among specimens of '*minutus*' surviving from collections dating about a hundred years back. Thus all four from Shuckard's and eight out of fourteen from Westwood's collection (Oxford Museum) are *insidiosus*. It suggests that the species was at one time more numerous.

Channel Islands: Jersey, Guernsey (Luff, 1907; as *friesei* apud E. Saunders).

Specimens examined.

(¹ = coll. Brit. Mus.; ² = coll. Oxford Mus.; ³ = coll. O. W. Richards; ⁴ = coll. G. M. Spooner.)

D. insidiosus. Surrey: Chobham, 7-78 (E. Saunders), 1 ♀⁴. Kent: Deal, 13-8-91 (A. J. Chitty), 1 ♀². Middlesex: Hampstead Heath, 9-7-25 and 2-7-26, 2 ♂♂³. Sussex: Seaford, 9-9-81 (F. D. Morice), 1 ♀². Hants: New Forest, 7-00 (D. Sharp), 1 ♀; 22-7-06 (G. Arnold), 1 ♀; 14-7-09 (G. Arnold), 1 ♀: these in coll. R. C. L. Perkins, separated as '*friesei*'². Dorset: Southaven Peninsula, June to September, 1930-38, 2 ♂♂ and 15 ♀♀⁴. Britain, localities unknown: 3 ♂♂ and 1 ♀ (Shuckard)¹; 4 ♂♂ and 4 ♀♀ (Westwood)²; 1 ♂ and 1 ♀ (ex coll. Ent. Club)²; 1 ♂ (Capron) (ex coll. Morice)². Channel Is.: Jersey (E. Saunders), 2 ♂♂¹.

D. minutus. Surrey: Chobham, 1 ♂⁴ and 3 ♀♀^{1&2}; Woking, 12 ♂♂ and 17 ♀♀^{1,2&4}; Oxshott, 6 ♂♂ and 18 ♀♀³; Mitcham Common, 5 ♂♂ and 3 ♀♀³; Weybridge, 1 ♂ (coll. Swale)¹; Wisley, 3 ♀♀². Kent: St. Margaret's, 10 ♂♂ and 7 ♀♀²; Huntingfield, 1 ♀²; Westgate, 1 ♂²; Camber, 3 ♂♂ and 4 ♀♀³; (Blackheath, 2 ♀♀)². Middlesex: Hampstead Heath, 1 ♂³. Sussex: Hastings, 1 ♀¹. Hants: Hayling I., 2 ♂♂ and 2 ♀♀¹; Bournemouth, 4 ♂♂ and 1 ♀^{1&2}; Sway, 1 ♂²; New Forest, 1 ♂². Isle of Wight: St. Helen's, 4 ♀♀^{1&2}; Sandown, 1 ♂ and 8 ♀♀^{2&3}. Dorset: Weymouth, 3 ♂♂ and 4 ♀♀⁴; Portland, 4 ♂♂⁴; Lyme Regis, 1 ♀². Devon: S.: Budleigh Salterton, 1 ♂²; Dawlish, 6 ♂♂ and 1 ♀²; Chudleigh, 2 ♂♂⁴; Bovey Tracey, 2 ♂♂²; Trusham, 3 ♂♂ and 1 ♀². Devon, N.: Braunton Burrows, 2 ♂♂ and 5 ♀♀⁴. Berks: Wellington College, 1 ♂². Beds:

Sandy, 1 ♂⁴. Suffolk: Bury St. Edmunds, 1 ♂². Warwick: Hillmorton, 1 ♂ and 2 ♀♀². Cheshire: Wallasey, 3 ♂♂². Merioneth: Barmouth, 5 ♂♂ and 3 ♀♀¹. Britain, locality unknown: 4 ♂♂ and 2 ♀♀ (ex Westwood coll.)²; 7 ♂♂ and 14 ♀♀ (ex coll. F. Smith)²; ♂ and ♀ (ex coll. Rothney)²; 3 ♂♂ (Capron)²; 4 ♂♂ and 2 ♀♀^{1&2}. France: Cassis, Bouches-du-Rhône, 4 ♂♂ and 6 ♀♀³; St. Enimie, Lozère, 1 ♀³; Tarascon, Bouches-du-Rhône, 1 ♀³.

D. insidiosus is at once told from *friesei* Kohl by the minute rugulosity of the surface of the mesonotum, which in the latter species is quite smooth and shining between the punctures, and by the darker legs, which in *friesei* are quite as pale as in *minutus*. Further, the third joint of the antenna in the male of *friesei* is more elongate, being at least as long as the fourth joint. The female of *D. major* (the male being uncertain), while agreeing with *insidiosus* in the spacing of the clypeal spines and stronger puncturation, differs in some important respects. Thus the antennal joints are rather more elongate, especially the third, which is twice as long as wide at apex, as against about one and a half times in *minutus* and *insidiosus* (see Kohl's figures, 1901); while the extent of flavous colouring on the legs, the thickness of the temples and the sculpture of the propodacum resemble *minutus* in the respects in which they differ from *insidiosus*. Moreover, *major* is a larger species, the range of the female apparently exceeding even the upper limit of *minutus*.

I should like to express my gratitude to the staff of the British Museum, especially Mr. J. F. Perkins, for the facilities always readily given me for examining the national collections or consulting literature. My best thanks are also due to Dr. B. M. Hobby for the help given me in examining the collections in the Hope Department at Oxford, and to Dr. O. W. Richards for the kind loan of his specimens.

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The Brown House,
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 September, 1938.

SOME MORE NEW OR LITTLE KNOWN BRITISH SAWFLIES.
 HYMENOPTERA SYMPHYTA. III.

BY ROBERT B. BENSON, M.A.

The following four species are additions to the British list:—

**Urocerus cedrorum* (Smith).

In the British Museum there is a specimen of this species that was collected at Sittingbourne, Kent, 20.viii.1925, by J. W. Fryday 'at night.' The specimen was identified by the late Dr. J. Waterston as *Urocerus gigas* L., with which *U. cedrorum* Smith is superficially similar in size and general colouring but differs as follows:—

- (1) the part of the head behind the ocelli (postocellar area) is yellow (except for the medial furrow) instead of black, and instead of being densely punctured and pubescent in that region is smooth, shining and almost naked;
- (2) the hind tibiae are black on the apical two-thirds instead of being yellow with only the extreme apex brown-tipped;
- (3) the ovipositor is distinctly longer than the length of the abdomen and the cornus together instead of being considerably shorter than these.

U. cedrorum Smith (= *sah* Mocsáry syn. nov.), so far as is known, is native only to the Mediterranean region (Morocco, Greece, Asia Minor) and Caucasus, N. Persia to Turkestan, and was originally described from Mt. Lebanon, where it was presumed to be attached to cedar. (*U. gigas* L. in Britain occasionally attacks cedar; see Richardson, 1932, The London Naturalist (1931): 53.)

Actually *U. cedrorum* Smith is much more closely related to the West European *U. augur* Klug than to *U. gigas* L. *U. augur* Klug is also reported to have been found in Britain, but I have not been able to see any specimens so taken; it agrees with *U. gigas* L. in having a short ovipositor, but in other characters it is scarcely distinguishable from *U. cedrorum* Smith.

Urocerus cedrorum Smith and also *U. gigas* L. and our other giant wood-wasps can only be introduced aliens in Britain, except

possibly in a few of the old northern forests, because in all other parts of Britain our present conifers, *Pinus*, etc., are not derived from the original native stocks, which died out before our present stocks were introduced.

**Aprosthemella melanura* (Klug).

In the collection of the late Mr. J. J. F. X. King, submitted to me for naming from Glasgow University Museum by Mr. J. G. Kerrich, there is a male and female of *Aprosthemella melanura* Klug var. *friesei* Knw. collected by Mr. King in the New Forest, 18-25.vii.1907.

The genus *Aprosthemella* (Argidae), which is closely related to *Schizocera*, is mostly South and Central European in its distribution (though a few species spread into Siberia) and has not previously been found in Britain. The genus can be separated from *Arge* readily by the fact that the radial cells of both front and hind wings are open apically and that the male antenna has a two-pronged flagellum. From *Schizocera* it differs in having a broader head, twice as broad as high when viewed from in front instead of one and a half times as broad as high. *Aprosthemella melanura* Klug is a yellow-bodied insect with black head and thorax. The larva feeds on the Yellow Meadow Vetchling (*Lathyrus pratensis* L.) and was described by Conde, 1934 (*Fol. zool. hydrobiol.* 7: 20-30).

**Emphytus coryli* Stritt.

Prof. Walter Stritt, 1938 (*Konowia*, 16 (1937): 296-300) has recently described a new species from Germany very similar to *Emphytus cingulatus* Scop., but attached to Hazel instead of Rose. I have found one British specimen, a female, belonging to this species; it was taken at Oxshott, Surrey, 12.v.1928, by my colleague Mr. D. E. Kimmins.

In the new species the clypeus and scutellum are more densely punctured, the postocellar area is longer compared with its breadth, the fore-legs are much darker in colour and the fifth abdominal segment in the female is only banded above at the base instead of being entirely yellow above and below.

**Pontania purpureae* (Cameron).

Cameron, 1884 (*Ent. Mon. Mag.*, 21: 80) described a *Nematus purpureae* on the basis of a single specimen bred from a rolled leaf of *Salix purpurea* L. near Worcester by J. E. Fletcher. From

that date until 1936 the species remained unrecognised. The single type-specimen, in bad condition, was placed in the collection at the British Museum as an abnormal *Pontania proxima* Lep., and Enslin treated the name as a synonym of *P. leucapsis* Tischbein.

In the summer of 1936 I found rolled leaves of *Salix purpurea* L., containing sawfly larvae unknown to me, at Startop's End Reservoir, Tring. In 1936 also Prof. Walter Stritt, of Karlsruhe, Germany, found and bred similar larvae and in the winter sent me specimens of the adult to compare with Cameron's type-specimen. In the following May and June I collected long series of both males and females of the adult at Tring and later the same year bred out further specimens. Keeping a look-out for the species in other parts of Britain during 1937 and 1938, I found it widespread and mostly common wherever *Salix purpurea* L. grows: the leaf-rolls were detected in various parts of Hertfordshire and Buckinghamshire, near Southampton (Hampshire), in Teesdale (Yorkshire and Durham) and in various parts of the border counties, Cumberland, Northumberland, Roxburghshire and Dumfries. Mr. H. J. Burkill kindly looked for it in Shropshire and sent me some leaf-rolls from near Church Stretton. The adult is superficially like the gall-making species *Pontania proxima* L. and *femoralis* Cameron (= *robbinsi* Benson). It differs from all other known European *Pontania* by its long tarsi, which on each hind leg equal the length of the tibia. In all other *Pontania* the hind tarsi are not more than seven-eighths the length of the tibia. From *P. proxima* Lep. it differs in the longer antennae, the dark hind femora, and in the female the much shorter sawsheath, less in length than abdominal segments 2-7 instead of more. *P. femoralis* Cameron differs from both these species by its paler stigma (brown not black at apex), and in the female by its long cerci, which project as far back as the apex of the sawsheath. A detailed account of the biology of this species has just been published by Stritt (1938, *Arb. morph. taxon. ent. Berlin*, 5: 249-252, figs. 2-4).

British Museum (Natural History),

London, S.W.7.

October 3rd, 1938.

Mecinus collaris Germ. in Scotland.—I cannot find any records of this weevil from Scotland, so the capture of a specimen in flood-refuse at Glencaple, Dumfriesshire, in March last is worth mentioning. Of less interest *Hypera pollux* F. and *H. alternans* Steph. were also taken and the pretty little golden green *Phaedon concinnus* Steph. was not uncommon on the salt-marsh by the river Nith.—F. H. DAY, Carlisle: October 7th, 1938.

Glaenocoris cavifrons Th. in Cumberland.—After several years' unsuccessful search for this Corixid in Cumberland I was glad to run it down in April last in the large reservoir at Castle Carrock from which the City of Carlisle gets its water. The species of course occurs in the adjoining county of Westmorland, having been found in Brackenber Tarn by Professor Hutchinson, and more recently by my friend T. T. Macan of Wray Castle. Both the Cumberland and Westmorland habitats consist of clear fresh water with an absence of peat. Other Corixids present at Castle Carrock were *Sigara scotti* Scott, *distincta* Fieb., *sahlbergi* Fieb., and *striata* L. The Corixidae are well represented in Cumberland, the present addition to the county list bringing the number of species I have now taken up to twenty-three.—F. H. DAY: *October 7th, 1938.*

Spilomena troglodytes v. d. Lind. in Dumfriesshire.—I can find very few references to the capture of this, the smallest of our British Fossors, so it may be worth recording the capture of a single specimen here. On the evening of 26.vii.37 I was sweeping for small Parasitic Hymenoptera along the edge of a potato field about two miles north of Gretna, and this insect was among my 'bag,' although I did not know that such was the case until next morning when going over my captures. It is very like a small black Braconid and thus may readily be passed over. Saunders gives no localities from Northern England or Scotland. I have spent much time this year in a further quest for it but without success. Dr. O. W. Richards kindly determined my specimen.—JAS. MURRAY, 6 Burnside Road, Gretna, Dumfriesshire: *October 2nd, 1938.*

Reviews

'THE BRITISH MOSQUITOES.' By J. F. MARSHALL, C.B.E., M.A., F.R.E.S., Director, British Mosquito Control Institute, Hayling Island, Hants. London: Printed by order of the Trustees of the British Museum. Pp. xii + 341, 172 figs., 20 pls. (9 coloured). Issued 23rd July, 1938. Price £1.

It is the lot of a well-defined group of insects of economic importance to receive such intensive study that the knowledge of the fundamental features of their morphology, life-history and development grows apace. This is well shown in the degree of completeness and the general high level of excellence in the volume now before us. Indeed, as regards the so-called mosquitoes, few, if any, other groups of British insects can be so thoroughly known that it would be possible to construct keys not only to the adult forms, but also to their hypopygia, first instar and the later stages of larvae and the pupae.

The work is richly illustrated in colour, photogravure and line-blocks, and many of the drawings are by the master-hand of Terzi. Its style is remarkably clear and concise, although there are, perhaps, too many footnotes. The keys, so far as they have been tested, work well, but the inclusion of page-references to the more detailed descriptions would have been an advantage. Of the twelve chapters, the first three are introductory, while the next contains a detailed account of the stages of development of a mosquito. The four following sections enable the reader to distinguish the various species, and give a summary of all important information available concerning them, including an interesting account of the two species until recently confused under the name of *Culex pipiens*, one of which is a man-biter and the other is not. Chapter 9 describes the present position of 'mosquito control' in Britain, where they may fortunately be regarded as a nuisance rather than as serious carriers of disease. Chapter 10 is concerned with bionomic problems such as feeding, oviposition, swarming, range of flight, etc., and ends with a discussion of the almost complete disappearance of malaria in Britain, concluding that this is due to the amelioration of

living conditions which has destroyed the intimate association between man and the race of *Anopheles maculipennis* hibernating in warm houses or stables. The last two chapters comprise a bibliography of over two hundred references and a detailed index, unfortunately sub-divided into three sections.

British Dipterists have long awaited this book, but now that it has at last appeared they will agree that it has been worth waiting for, and reflects much credit upon all concerned in its preparation.—B.M.H.

Society.

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held at the Burford Bridge Hotel, Box Hill, Surrey, on Tuesday, September 8th, 1938, Mr. W. Rait-Smith in the Chair.

Members present in addition to the Chairman: Mr. H. Donisthorpe, Mr. H. Willoughby Ellis, Mr. Jas. E. Collin. Visitors present: Mr. H. M. Edelsten, Mr. F. W. Frohawk, Mr. W. J. Kaye, the Rev. John Metcalfe, Capt. N. D. Riley, Mr. W. H. T. Tams.

The company was invited to lunch which was served at 1.15, after which Mr. Donisthorpe exhibited two flies which had been recently added to the British list, the one a large Asilid *Laphria gilva* L., first taken by Mrs. Blair on the occasion of the excursion of the South London Entomological Society to Windsor Forest, and subsequently six more specimens were taken in the same place by Dr. Blair, Mr. C. E. Tottenham and the exhibitor. The second was a pretty fly, *Chrysopilus laetus* Zett.?, possibly new to science, as there is nothing like it in the British Museum collections. It was taken by the exhibitor as a pupa in the mud of a pond in Windsor Forest and subsequently successfully reared.

Mr. Collin, with regard to *Laphria gilva*, congratulated those who had captured this fine species in Britain, and added that it was by no means rare on the Continent; in Denmark Lundbeck had recorded it as very common where *Tomicus typographus* was abundant and that it preyed upon that beetle. It appears probable therefore, that if a search were made it would be found in other localities in this country.

In the early afternoon a walk over the summit of Box Hill was undertaken, and notwithstanding the slight misty rain, it afforded very great pleasure. The magnificent view over the South Downs was rather impaired by the weather conditions, but nevertheless provided a panorama which is too well known to describe. The easier journey down hill ended by arrival at the Hotel in time for tea, where very pleasant conversations took place amongst the members and visitors. After a most enjoyable day the party dispersed about 6 o'clock.—H. WILLOUGHBY ELLIS, *Hon. Secretary*.

A PRELIMINARY LIST OF THE COLEOPTERA OF WINDSOR FOREST.

BY HORACE ST. J. K. DONISTHORPE, F.Z.S., F.R.E.S., ETC.

(Concluded from p. 222.)

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1931. 'Another *Malachius* new to Britain.' Ent. Mo. Mag., 67, 194.
1931. 'Immigrants.' Ent. Record, 43, 141.
1931. 'Coleoptera, etc, in Moorhens' and Swans' nests.' Ent. Record, 43, 177.
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1932. 'The Coleopterous Fauna of a Willow Swamp in Windsor Forest.' Ent. Record, 44, 4-6.
1932. 'Catalogue des Insectes Coléoptères de la Forêt de Fontainebleau avec indication des espèces nuisibles aux arbres.' By Colonel F. Gruardet. Review and comparison with Windsor Forest. Ent. Record, 44, 33.
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1932. 'Some Species of Hymenoptera found with Ants.' Ent. Record, 44, 86.
1932. '*Byturus fuscatus* F. in Buttercups.' Ent. Record, 44, 93.
1932. 'Early appearance of the "Red Admiral" (*Pyrameis atalanta*).' Ent. Record, 44, 93.
1932. '*Psilota anthracina* Mg., a rare Dipteron taken in Windsor Forest.' Ent. Record, 44, 93.
1932. 'How *Ranatra linearis* L. swims.' Ent. Record, 44, 129.
1932. 'Further records of *Staphylinus cupreus* Rossi and *S. aeneocephalus* De G.' Ent. Mo. Mag., 68, 231.
1932. '*Stenophylax dubius* Steph., a very rare Trichopteron in Windsor Forest.' Ent. Record, 44, 160.
1933. 'Further Notes on a Willow Swamp in Windsor Forest.' Ent. Record, 45, 4-5.
1933. 'A Variety of *Malachius marginellus* new to Science and an Aberration new to Britain.' Ent. Mo. Mag., 69, 25-27.
1933. 'The True Habitat of *Gyrophæna lucidula* Er. and *G. convexicollis* Joy.' Ent. Record, 45, 126.
1933. 'Unusual Behaviour of Larvae of *Tortrix viridana* L.' Ent. Record, 45, 140.
1933. '*Ips* (= *Tomicus*) *suturalis* Gyll. in Windsor Forest.' Ent. Mo. Mag., 66, 105.
1933. '*Dendrosoter protuberans* Nees (*Doryctinae*. *Braconidae*), a Species of Hymenoptera Parasitica new to Britain.' Ent. Mo. Mag., 66, 153.

1933. '*Cis quadridentellus* Perris [Cissidae Col.], a Species of Coleoptera new to Britain.' Ent. Record, **45**, 161.
1933. '*Denops albofasciatus* Chap. (Cleridae, Col.), captured in Britain.' Ent. Record, **45**, 164.
1933. 'Additional Records of Ants and Myrmecophiles in Britain since the 2nd Edition of British Ants' (1927) and my 'Paper on the Ants and Myrmecophiles of Windsor Forest (1930).' Ent. Record, **45**, 132-36.
1934. '*Tychus ibericus* Motsch. (Col. Pselaphidae), a Beetle new to Britain.' Ent. Mo. Mag., **70**, 9.
1934. '*Oxytoda filiformis* Redt. (Col. Staphylinidae), a Beetle new to Britain.' Ent. Mo. Mag., **70**, 55.
1934. 'Unusual Captures at Hawthorn and other Blossoms.' Ent. Record, **46**, 32-3.
1934. 'Marriage (?) Flights of some Coleoptera.' Ent. Mo. Mag., **70**, 80.
1934. '*Arrhinomyia cloacella* Kram., a rare Dipteron from Windsor Forest.' Entom., **67**, 117-18.
1934. '*Ebaeus abietinus* Abeille (Col. Malachiidae), a Beetle new to Britain.' Ent. Mo. Mag., **70**, 198.
1934. '*Hypophloeus fraxini* Kugel. abundant in Windsor Forest.' Ent. Mo. Mag., **70**, 208.
1934. 'Some New and Unrecorded Aberrations of British Coleoptera.' Ent. Mo. Mag., **70**, 230.
1934. 'Abundance of *Melolontha vulgaris* F. in Windsor Forest.' Ent. Record, **46**, 94.
1934. '*Diprion polytomum* Htg. in Windsor Forest.' Ent. Record, **46**, 94.
1935. 'The British Fungicolous Coleoptera.' Ent. Mo. Mag., **71**, 21-24, 25-31.
1935. '*Cryptophagus stramenti* n.sp. (Col. Cryptophagidae), a Species of Coleoptera New to Science, and a Note on *C. umbratus* Er. and *C. distinguendus* Stm.' Entom., **68**, 110-11.
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1935. '*Xiphydria camelus* L. in Windsor Forest.' Ent. Record, **47**, 79.
1935. 'The Broad-Bordered Bee Hawk Moth (*Macroglossum fuciformis*) in Windsor Forest.' Ent. Record, **47**, 79.
1935. 'Abundance of *Lucanus cervus* L. in Windsor Forest.' Ent. Record, **47**, 104.
1935. 'Two other Insects in great Profusion.' Ent. Record, **47**, 104. [*Stenus picipes* Steph. and *Sepsis cynipsea* L.]
1935. '*Hydrotaea irritans* Flin. ♀ attacked by *Caricea tigrina* Gab. ♀.' Ent. Record, **47**, 114.
1935. '*Astichus arithmeticus* Först. and *Aphanogmus fuscipennis* Thoms., two species of Hymenoptera Parasitica from Windsor Forest new to Britain.' Ent. Mo. Mag., **71**, 256.
1935. 'Two Aberrations of Coleoptera new to Science and one new to Britain.' Ent. Record, **47**, 124. [From Windsor, *Coccinella 11-punctata* L. ab. *janeae* Donis., and *Phyllobius oblongus* L. ab. *floricola* Hbst.]

1935. '*Dendrophilus pygmaeus* L. in Windsor Forest.' Ent. Record, **47**, 79.
1935. 'Some Parasites, etc., in the Nests of the House Martin (*Chelidon urbica* Linn.) in Windsor Forest.' Ent. Record, **47**, 130.
1935. 'Two Species of Coleoptera new to Britain.' Ent. Mo. Mag., **71**, 270-72. [*Ocalea puncticollis* Muls. and Rey, from Windsor.]
1936. 'The Dancing Habits of some *Braconidae*.' Ent. Record, **48**, 84.
1936. '*Gastrallus laevigatus* Ol. (*Anobiidae* Col.), a Genus and Species of Coleoptera new to the British List.' Ent. Mo. Mag., **72**, 200.
1936. '*Ibalia cultellator* Latr. in Windsor Forest.' Ent. Record, **48**, 100.
1936. '*Cathartus (Ahasverus) advena* Walzl in the open.' Ent. Mo. Mag., **72**, 228.
1936. '*Cis savilli* n.sp., a Species of Coleoptera New to Science.' Ent. Mo. Mag., **72**, 220.
1936. '*Aglais urticae* L. in abundance.' Ent. Record, **48**, 115.
1936. '*Philonthus rectangulus* Sharp at Windsor.' Ent. Record, **48**, 115.
1936. '*Leptacinus intermedius* n.sp. (Col. *Staphylinidae*), a Beetle New to Science.' Ent. Mo. Mag., **72**, 269-70. With Plate.
1937. '*Euplecti* as Myrmecophiles.' Ent. Record, **49**, 4-5.
1937. '*Langelandia anophthalma* Aubé.' Supplementary note. Ent. Record, **49**, 60.
1938. '*Velleius dilatatus* F. in Windsor Forest.' Ent. Record, **50**, 94.
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SUPPLEMENT.

The majority of the species in this Supplementary List have been taken during the time the main list was in course of publication; a few, however, were omitted by mistake.

The complete list now includes upwards of 1,870 species, besides 87 aberrations and varieties. Some of these, such as *Bembidium 4-pustulatum* Dej. and *Aulonium trisulcum* Geoff., etc., have increased enormously in numbers in the last few years; others have become very rare and have not been met with for a long time in the Forest.

Two rather striking flies, both new to Britain, have been recently captured in Windsor Forest. The first, a large Asilid, *Laphria gilva* L., was taken by Mrs. Blair at rest on a Scots Pine trunk; further specimens were subsequently taken by Dr. Blair, the Rev. C. Tottenham and the writer in the same place.

The other, a very pretty fly, *Chrysopilus laetus* Zett. was reared from a puparium taken by me in the mud round a pond. *C. laetus* is not represented in the British Mus. Coll. and the Windsor specimen may prove to be a new species. [Subsequently determined by Dr. Lindner of Stuttgart as *C. nubecula* Fallén.]

CARABIDAE.

Stenolophus teutonius Schr. Running on mud round pond; scarce. (vii.)

Badister sodalis Duft. Under stones in willow-swamp; scarce. (vii.)

Harpalus seladon Schaub. (*rufibarbis* Fowler in part). By sweeping; not common. (vii.)

Pristonychus terricola Hbst. At roots of tree and under board in a sandy place; scarce. (viii.)

Anchomenus piceus L. Running on mud in damp place; scarce. (viii.)

Bembidion lampros Hbst. ab. *velox* Er. On mud round pond and under stones in damp place; not common. (vi.)

B. obliquum Sturm. Under stones in damp place; scarce (Blair). (vi.)

Metabletus truncatellus L. One under dead leaves (iii) (Allen).

STAPHYLINIDAE.

Oxyptoda lentula Er. In flood-refuse and in willow-swamp; not common. (iii, vi.)

O. exigua Er. By sweeping sedge round mere; scarce. (vii.)

O. misella Kr. Under bark of beech root, one specimen (Allen). (vi.)

Calodera umbrosa Er. In moss in willow-swamp (x); one specimen under dead bird. (vi.)

Atheta occulta Er. In fungi, straw-refuse, owl's nest, etc.; not uncommon. (iv, v, vi.)

A. angustula Gyll. In flood-refuse, by sweeping round mere, etc.; not common. (iii, x.)

A. subdebilis Joy (= *nannion* Joy). In flood-refuse (Allen). (iii.)

A. xanthopus Th. In fungi; scarce. (vi.)

A. perexigua Sharp. In straw, fern-stack refuse and owl's nest; scarce. (iv, vi, vii.)

A. subtilis Scriba (*indiscreta* Sharp). In the 'Dryad's Saddle' fungus; scarce. (ix.) The only other *English* record for this species is Sherwood Forest (Blatch).

A. scapularis Sahlb. By evening sweeping; scarce (Allen). (vi.)

Tachyusa atra Gr. In wet moss in willow-swamp, on mud round ponds; scarce. (vi, vii, viii.)

Conosoma bipunctatum Er. Under bark of a rotten log; scarce (Allen). (vi.)

Velleius dilatatus F. An adult specimen was taken at the base of a bunch of dry fungi, 21.vii.38. Only the larva had been taken previously. See main list.

Achenium humile Nic. At roots of grass round elm post, also in company with *A. depressum* Grav.; not common. (ii, iv.)

Cryptobium brevipenne Muls. & Rey. All the Windsor specimens of *Cryptobium* are to be referred to this species and not *C. glaberrimum* Hbst., as recorded in the main list.

Paederus littoralis Grav. Running on stack of wood and on logs. This common species is very scarce here. (iii, viii.)

P. riparius L. By sweeping sedge round mere; scarce. (vi.)

Evaesthetus scaber Grav. In moss; scarce (Allen). (iv.)

Bledius fracticornis Payk. In the main list. Running on and in mud round pond, also in burrows in a damp place; not common. (vi, vii.)

Oxytelus clypeonitens Pand. One by sweeping (Allen). (vii.)

Acrognathus mandibularis Gyll. Under stone in a damp place (Blair). (vii.)

SILPHIDAE.

Agathidium convexum Sharp. In fungus on old stump; very scarce. (vii.)

Cyrtusa pauxilla Schm. By evening sweeping; very scarce (Allen). (vi.)

SCYDMAENIDAE.

Neuraphes angulatus Müll. In moss; scarce. (vii.)

PSELAPHIDAE.

Bythinus securiger Reich. One specimen in moss in willow-swamp (Allen). (ii.)

TRICHOPTERYGIDAE.

Trichopteryx borina Mots. Often under dry horse- and cow-dung on roads, etc. (viii.)

T. brevipennis Er. In 'Sulphur Bracket' fungus, etc.; scarce. (ix, x.)

Nephanes flaviventris Mots. In fern-stack refuse; fairly common. (vi, vii, viii.) This species has not apparently been recorded from Britain, although there is a series from Matthews' collection 'without locality in the British Collection in the British Museum (Nat. Hist.) separated by I. B. Ericson from the series of *N. titan* Newm. Matthews gives Central America as the locality for *N. flaviventris* Mots., though there is a specimen from Algeria in the British Museum.

COCCINELLIDAE.

Halysia 12-guttata Poda. 'Rare: I possess a fine series of which the greater portion were taken in the years 1815-16 in Windsor Forest' — Stephens (1831) (*sub Coccinella bissexguttata* Illiger). There are five specimens in the Stephensian collection. 'The only specimen I have seen was a pinned one in Griesbach's collection, now in the possession of Mr. Mason' — Fowler (1888).

Scymnus testaceus Mots. This is the typical form of *S. scutellaris* Muls. mentioned in the main list. By sweeping round mere; scarcer than the ab. (ix.)

HISTERIDAE.

Hister carbonarius Ill. This is the species mentioned twice (as *H. cadaverinus*), the second time as *cadaverinus* Illiger.

Acritus atomarius Aubé. In burrows of *Dorcus* in beech; one specimen, 23.i.38.

NITIDULIDAE.

Rhizophagus nitidulus F. Not uncommon under bark of oak stumps; local. (iii.)

LATHRIDIIDAE.

Melanophthalma similata Gyll. By beating spruce and in frass of tree; scarce. (iii, ix.)

CRYPTOPHAGIDAE.

Cryptophagus badius Sturm. In *Hypoxylon fuscum* and a dozen specimens in loose straw. (x.)

Atomaria gutta Steph. In moss in willow-swamp (Allen). (iii.)

Atomaria versicolor Er. Under dry dung, one specimen (Allen). (vii.)

PARNIDAE.

Elmis aeneus Müll. One by sweeping grass. I have never been able to find it in its proper habitat under stones in streams. (vi.)

SCARABAEIDAE.

Onthophagus vacca L. A thorax of this species found in a bird's nest (ix) (Allen).

DASCILLIDAE.

Cyphon coarctatus Panz. 'Taken near Windsor' (Stephens, 1832). By sweeping reeds, etc., in damp places; not uncommon. (vi, viii, ix.)

CERAMBYCIDAE.

Strangalia melanura L. By general sweeping and beating bramble-blossoms; not uncommon. (vi, vii.)

CHRYSOMELIDAE.

Chaetocnema aridula Fourc. In fair numbers by sweeping tussocks of grass; very local. (ix, x.) This is the insect recorded as *C. confusa* in the main list.

TENEBRIONIDAE.

Alphitophagus 4-pustulatus Steph. One on a cut beech bough (vi) (Allen).

CURCULIONIDAE.

Apion affine Kirby. Under dead bracken in sand-pit; very scarce. (x.)

Trachyploeus aristatus Gyll. One specimen in a small sand-pit. (vii.)

T. squamulatus Ol. One specimen in the same sand-pit (Allen). (vii.)

Tychius junceus Reich. One specimen by sweeping (vi) (Allen).

British Museum (Natural History),

Cromwell Road, London, S.W.7.

November, 1938.

NEW MYRMECOPHILOUS STAPHYLINIDAE (COL.) FROM
EAST AFRICA.

BY MALCOLM CAMERON, M.B., R.N., F.R.E.S.

***Pygostenus reichenspergeri* sp. nov.**

Fore-parts moderately shining, yellow, the head, except in front, black; abdomen duller, light chestnut-red. Antennae reddish, the base and eleventh joint yellowish. Legs yellowish-red. Length 2.75 mm.

Build of *fauveli* Wasm. but smaller, differently coloured and with different sculpture. Head finely and closely punctured, here and there with a larger puncture furnished with a short stiff hair. Antennae with third and following joints all longer than broad, decreasing in length, the eleventh as long as the ninth and tenth together. Thorax twice as broad as the length along the middle, the anterior border broadly arcuately emarginate, with fine close puncturation as on the head and larger scattered punctures each with a short stiff hair. Elytra at the suture as long as the thorax along the middle, along the reflexed sides finely striate, the striae not extending on to the disc or base, with sculpture and hairs as on the thorax. Abdomen with the first five visible segments each with a transverse row of four long black setae and more numerous yellow ones as well as a fine depressed yellow pubescence on all the segments.

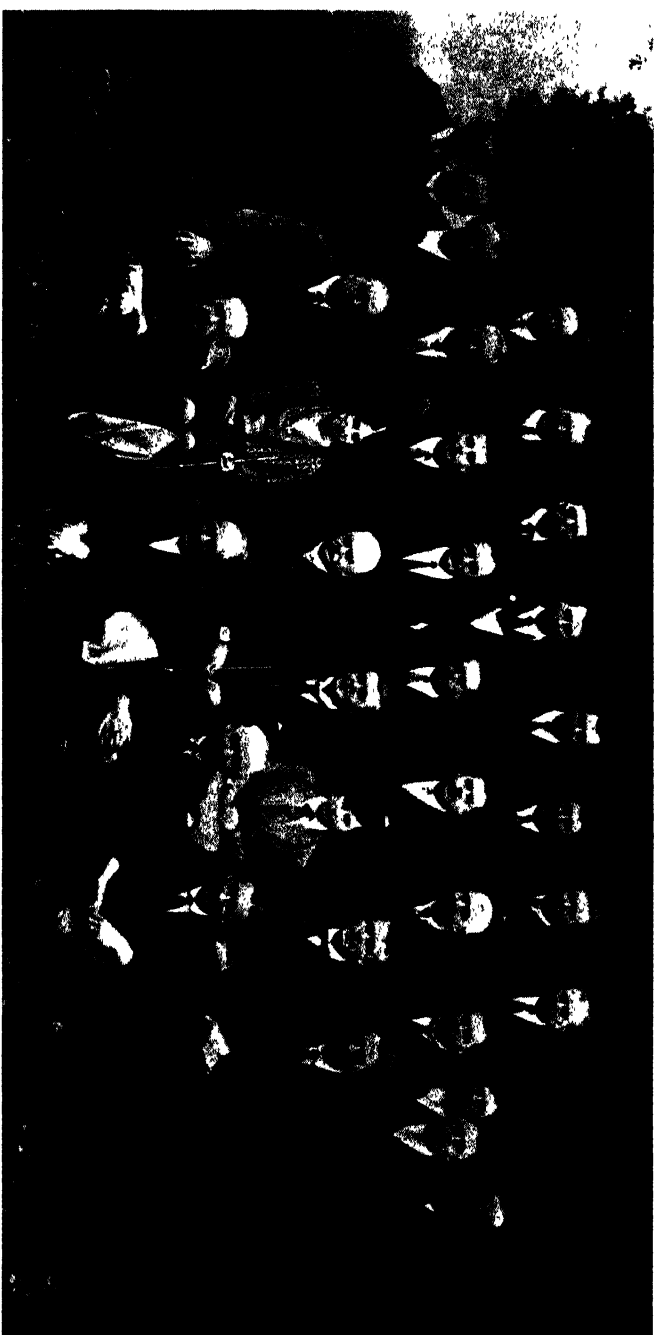
‘**NYASALAND:** Ngerengere. With *Anomma nigricans molesta*.

***Doryloxenus castaneus* sp. nov.**

Shining, light castaneous red, the head and last two abdominal segments yellow. Antennae and legs reddish-yellow. Length 2 mm.

Size and lustre of *hirsutus* Wasm. but of lighter colour and with longer thorax, the few punctures yet finer, the fore-parts without ground sculpture or pubescence. Head and thorax with a few scarcely perceptible punctures, the latter about a third broader than long, the sides straight and retracted from the posterior to the anterior angles. Elytra at the suture about half as long, at the sides as long as the thorax, with a very few scarcely visible punctures and without ground sculpture. Abdomen normal with sparing punctures each with a long yellow hair and without other sculpture or pubescence.

NYASALAND: Ngerengere. With *Anomma nigricans molesta*.



WINDSOR GREAT PARK, SEPTEMBER 15TH, 1928.
Mr. H. St. J. Domsborpe and Miss Kirk with Mr. Lloyd and group from the Crown Estate Offices
in front of the 'Watch Oak.'

Aenietonia (Anommatoria) reichenspergeri sp. nov.

Light chestnut-red, the head pitchy-brown, the abdomen more shining than the fore-parts. Antennae and legs reddish-yellow. Length 6 mm.

In colour similar to *anommatorphila* Wasm. but with less shining fore-parts, different antennae, the sides of the thorax not sinuate, etc., nearest to *Vosseleri* Wasm., but a little larger and more robust, the fourth joint of the antennae much shorter, the fifth distinctly transverse, larger eyes, the sides of the thorax not sinuate, etc. Head transverse, as broad as the thorax, the eyes very large and prominent, the temples very short and produced as a blunt angle; antennal tubercles well developed, not continuous with the sharp intra-ocular ridges which are lightly curved, before the base with two strong oblique ridges almost meeting in front, strongly coriaceous and with a few very fine, obsolete, scarcely visible punctures. Antennae rather short, the first joint stout and clavate, the second half as long, the third about a half longer than the second, the fourth short, obconical, fifth to tenth strongly transverse, eleventh as long as the ninth and tenth together. Thorax scarcely transverse, the sides gently rounded in front, straighter and slightly retracted but not at all sinuate behind, the disc with two strong parallel keels extending from base to apex, along the middle with a deeply impressed line, the sculpture as on the head. Elytra slightly longer and considerably broader than the thorax, each with three strong nearly parallel keels as in *anommatorphila* and *vosseleri*, strongly coriaceous and with closer, less fine and much more distinct (but not asperate) punctation. Abdomen narrowed towards the apex, very finely, closely and asperately punctured, finely coriaceous.

NYASALAND: Ngerengere. With *Anomma nigricans molesta*.

Anepleuronia reichenspergeri sp. nov.

Shining, light ferruginous red, the elytra reddish yellow. Antennae and legs reddish-yellow. Length 5 mm.

Of the build of *gedyei* Bernh., but smaller, rather more shining and differently coloured, the antennae more slender, with longer penultimate joints, the ground sculpture less evident. Head slightly broader than the thorax, transversely suborbicular, the eyes very large and prominent, occupying the whole side; narrowly sulcate along the middle before the base, extremely finely and very sparingly punctured and with a scarcely visible ground sculpture. Antennae long and slender, the third joint a little shorter than the second, fourth to tenth all much longer than broad, decreasing in length, the tenth about a half longer than broad, the eleventh shorter than the ninth and tenth together. Thorax a little longer than broad (3.5 : 3), the sides rounded in front, broadly arcuately emarginate behind, along the middle line narrowly sulcate, behind the middle transversely impressed, extremely finely and very sparingly punctured, the ground sculpture very feeble. Elytra longer (4.5 : 3.5) and broader than the thorax, extremely finely and very sparingly punctured, the ground sculpture distinct. Abdomen impunctate, coriaceous like the elytra and without pubescence. Fore-parts with short, scanty yellow hairs.

NYASALAND: Ngerengere. With *Anomma nigricans molesta*.

15 Teesdale Road,

Leytonstone, London, E.11.

November 15th, 1938.

A WATER BUG NEW TO GREAT BRITAIN—*HYDROMETRA*
GRACILENTA HORVATH.

BY G. A. WALTON.

INTRODUCTION.

While collecting aquatic Hemiptera at Barton Broad, Norfolk, between August 5th and 7th, 1938, I noticed that the *Hydrometra* were smaller than is usual for *H. stagnorum* L., were also paler and had a shiny abdomen. In *H. stagnorum* the abdomen is finely pubescent and thus appears dull. Microscopical examination of the male showed that the two teeth on the underside of the genital segment (8th) present in *H. stagnorum* were missing, a character which settled the identification as *H. gracilentata* Horváth, a species quite widely distributed on the Continent. This species has not previously been recorded in Great Britain, perhaps because British collectors have not been aware of the differential characters of this second European species. For this reason included herein are some information about its habits and short descriptions of the external comparative morphology (with figures), which should enable collectors of Hemiptera to ascertain the Britannic distribution.

ECOLOGY.

The species was found in the north-western part of the Broad near the Staithe or landing-place, and also in a ditch just north of Great Fen, which is a small fen to the south-west of Barton Broad.

At the first-named place it occurred regularly but very sparingly on the old ditches in the depths of the swamp where they are shaded by *Salix* and *Phragmites*. These ditches are full to within a few inches of the surface with black flocculent mud and have very low banks of peat. *H. gracilentata* is only found where the thick marginal *Carex pseudo-cyperus* and *Juncus* (*effusus* usually) hang over and dip into the water and form a dark dank tunnel against the bank. In this tunnel at long intervals odd specimens and a few nymphs were to be found. This gloomy habitat they share with *Microvelia*, *Salda cincta*, Arachnida, Collembola and Mosquitoes. Occasionally an odd example would turn up where there was more light and the vegetation included *Nuphar luteum*, *Hydrocharis morsus-ranae* and *Stratiotes aloides*.

On the ditch at Great Fen (about two hundred yards long) *H. gracilentata* was only found in one clump of marginal *Juncus effusus* which hung over into the water. The same fauna was present.

COMPARISON OF THE TWO SPECIES.

The following brief descriptions were made from British material:—

Hydrometra gracilenta Horváth, 1899.

H. gracilenta. Természetrájsi Füzetek, Vol. XXII, pp. 450-1.

Brachypterous male. Length 7 mm. Head two-fifths length of body, four times as long as ante-ocular width. Post-ocular length one-quarter longer than ante-ocular distance posterior to the expanded portion. Colour dark brown, paler at base and apex. Eyes reddish. Antennae dark brown, first segment pale at base, ratio of the lengths of the successive segments 8:13:33:28. Clypeus acutely oval. Rostrum reaching back to two-thirds of the post-ocular cephalic distance. Mid breadth of dark brown pronotum five-twelfths the length, a median longitudinal line of very faint pits; pits in post. half slightly frosted; other pits invisible. Metanotum Indian red; borders dark brown; hemelytra about as long, their inner border broadly brown-pink. Abdomen

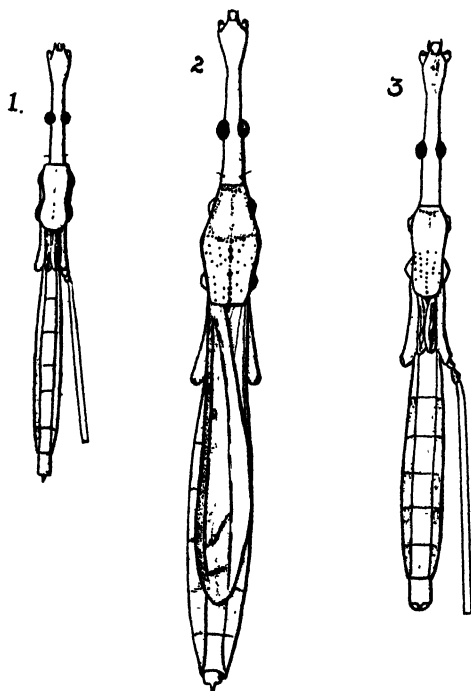


FIG. 1.—Brachypterous male of *Hydrometra gracilenta*.

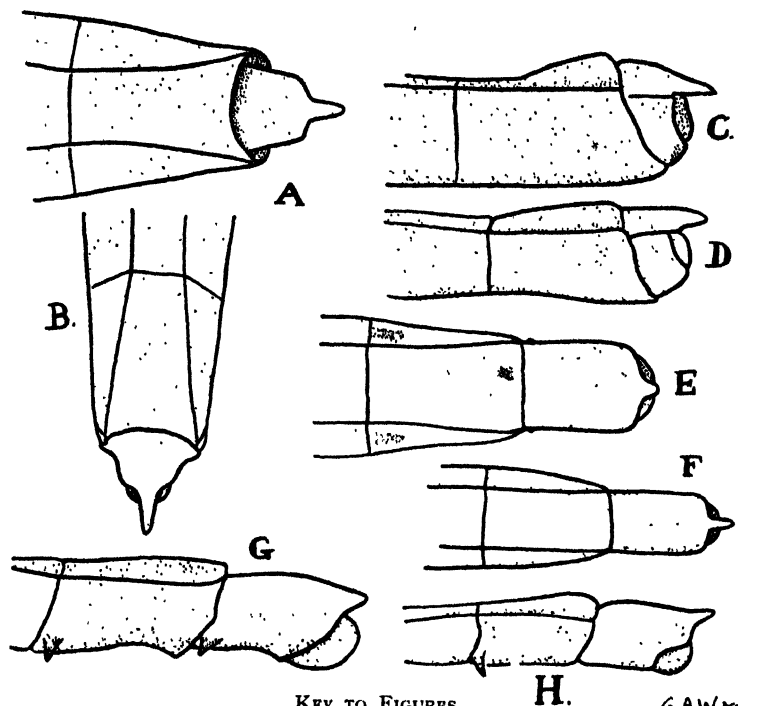
FIG. 2.—Macropterous female of *H. stagnorum*.

FIG. 3.—Brachypterous male of *H. stagnorum*.

black, connexivum dull; dorsum shiny, faintly transversely ridged and finely scattered with small hairs; seventh ventrite with a bilateral basal spine; eighth segment, seen from above, oblong with distinct apical point; lateral view, distal end obliquely strongly sinuate, apex prominent, pointing slightly upwards. Legs rufescent, posterior femora reaching middle of seventh abdominal seg-

ment, ratio of ant. : middle : post. femora = 9 : 10 : 16.

Brachypterous female. Length 8.5 mm. Abdomen brown with dark brown bordering to all shiny sternites and dull connexivites. Eighth segment pyramidal with sharp apical projection. Post. femora reaching base of sixth segment.



KEY TO FIGURES.

A.	Apex of abdomen of <i>H. stagnorum</i>	viewed from above, female.
B.	" " " "	<i>H. gracilentia</i> " " " female.
C.	" " " "	<i>H. stagnorum</i> " " the side, female.
D.	" " " "	<i>H. gracilentia</i> " " " " female.
E.	" " " "	<i>H. stagnorum</i> " " above, male.
F.	" " " "	<i>H. gracilentia</i> " " " male.
G.	" " " "	<i>H. stagnorum</i> " " the side, male.
H.	" " " "	<i>H. gracilentia</i> " " " " male.

Macropterous examples were not found, so that no description can be made.

Twelve males and eleven females from Barton Broad, Norfolk. Outside Britain the species occurs in Scandinavia, Germany, France, Hungary and Rumania.

Hydrometra stagnorum (Linné, 1758).

Cimex stagnorum, Systema Naturae, 10th Ed., p. 450.

Brachypterous male. Length 9 mm. Head two-fifths length of body; five

and a half times as long as ante-ocular width, post-ocular length equal to ante-ocular portion posterior to dilated portion. Colour black, brownish towards base. Eyes reddish. Antennae dark brown, first two segments paler at base, ratio of length of successive segments: 8:12:36:24. Clypeus obtusely oval. Rostrum reaching to half the post-ocular cephalic distance. Mid. breadth of brownish pronotum one-third the length, with dark brown border and broad median longitudinal line distinctly frosted and with distinct frosted pits in the posterior half, which also bears numerous scattered frosted pits. Metanotum black, hemielytra about as long with black nervures and brown areoles, inner margins brown. Abdomen black, uniformly covered with fine golden pubescence, at base of each connexivite an oblong area of frosting. Sides of sternum with corresponding frosted areas. Seventh ventrite with a bilateral basal spine. Eighth segment from above oblong with apical point not projecting beyond the outline. Lateral view, slightly obliquely sinuate, apex blunt, slightly pointing downwards and with a sharp bilateral basal tooth. Legs rufescent, darkened towards the apex, posterior femora reaching beyond the apex of the abdomen.

Brachypterous female. Length 11 mm. General colour brownish instead of black. Posterior femora reach the apex of the abdomen. Eighth segment appears rectangular with sharp apical point. Sides of sternum marginated with russet, upon which is superimposed a longitudinal black line containing a few small frosted spots corresponding to the areas on the connexivites.

Macropterous specimens are not rare. The pronotum is larger, hexagonal and widest at the middle instead of narrowest as in the brachypterous examples; it is twice as long as broad and the hemielytra reach to the end of the sixth abdominal segment.

Common and widely distributed in the British Isles and is found throughout Europe and in North Africa and the Canary Isles.

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OBSERVATIONS CONCERNING ACULEATE HYMENOPTERA.

BY J. A. REID.

Aphomia sociella (L.) in association with *Bombus agrorum* (Fabr.).

On March 20th this year, while I was breaking up and examining a rotten birch stump, I found a mass of cocoons of the Galeriid moth, *Aphomia sociella* (L.). There had been a nest of

Bombus agrorum (Fabr.) in the base of the stump during the previous summer, and as the larvae of *A. sociella* are known to live in association with nests of humble-bees I sought for signs of a connection between the cocoon mass and the old bees' nest.

The bees' nest was in the base of the stump, and I found that the walls of the nest, made of moss and pieces of leaves, were heavily impregnated with silk threads. From the top of the nest a broad silken rope about fifteen inches long and full of pieces of rotten wood and débris, led up to the cocoon mass, which was close against the inside of the bark, about two feet above the ground. The volume of the mass was a little greater than that of a tennis ball, and it weighed about one ounce. The outside of the mass was composed of a layer of loose woolly threads full of débris, and in this outer layer were embedded a number of Dipterous puparia; the flies emerged during April and were identified by Dr. O. W. Richards as a Tachinid, *Brachycoma devia* (Fall.), parasitic upon species of *Bombus*. The inner and major part of the mass was formed by the numerous cocoons firmly adhering to one another side-by-side.

When the mass was found two cocoons were opened and each contained a full-grown larva; presumably the species overwinters in the larval state. Some of the moths emerged during May and June, but the cocoon mass was allowed to become too damp and the majority of the pupae died; no parasites emerged. Later I dissected the mass and counted the contents, and including those moths which emerged there was a total of 146 individuals. Considering the size of the moth, which has a wing spread of slightly over 30 mm., this seems a very large number to be associated with one humble-bees' nest.

This number was made up as follows:—

Moths which emerged	...	16	(14 ♂♂, 2 ♀♀)*
Dead pupae	...	117	
Dead larvae	...	13	
		<hr/>	
		146	

Pachyophthalmus signatus (Mg.) parasitising
Cerceris rybyensis (L.).

During July of this year I found a colony of about a dozen *Cerceris rybyensis* (L.) in a gravel path in the garden at home (Gerrards Cross, Bucks). While watching the wasps dig their

* The two females emerged after the fourteen males.

burrows and stock them with species of *Halictus* (e.g. *H. albipes* (Kby.)), I noticed a parasitic fly among the colony; it was one of those species that follow the intended host, flying persistently a few inches behind it. I caught the fly, which was a Tachinid, and Dr. Richards later identified it as *Pachyophthalmus signatus* (Mg.). There are, I believe, only two previous localised records of the species for this country, both made by Dr. Richards, the one from Slough and the other from Iwer. All three localities are within Buckinghamshire and are within about eight miles of one another.

Notes from the New Forest (New Park, near Brockenhurst).

Whilst watching an area of ground populated by numerous fossorial Hymenoptera of various species, I took a *Cerceris cunicularia* (Schr.), with prey, which proved to be the heather weevil, *Strophosomus lateralis* (Pk.).

Four females of *Mutilla europaea* L. were taken, the last on July 31st by myself, and after that no more were seen. Females of *Myrmosa atra* Panz. were not uncommon when searched for, and I took one male.

Dept. of Entomology,

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October 27th, 1938.

THE PARASITES OF BRITISH BIRDS AND MAMMALS.
XXI. ADDITIONS AND CORRECTIONS TO PREVIOUS
CONTRIBUTIONS.

BY GORDON B. THOMPSON.

Since the publication of the check-list of British Siphonaptera, the Hon. Miriam Rothschild (1936) has added another species to the British list. It is *Megabothris rectangulatus* (Wahlgren) and was found by Mr. D. H. S. Davis in the nest of *Microtus agrestis neglectus* Jenyns (Scottish Highlands Field Vole) at Glenfinart, Argyllshire. This new flea is closely related to *M. walkeri* (Rothschild) (1902) and *M. turbidus* (Rothschild) (1909). The addition brings the total number of species of Siphonaptera recorded from the British Isles to forty-seven.

Jordan (1937) has recently described a new genus for the reception of *Ceratophyllus waterstoni* Jordan (1925) (= *C. rothschildi* Waterston, 1910 nec Rainbow 1905). This species will in future be called *Orneacus waterstoni* (Jordan).

In the check-list of Hippoboscidae published in this journal (1936) I gave the date of publication of Leach's *Stenepteryx* incorrectly—it should have been 1818.

Two additional papers containing records of Mallophaga from British Birds have recently come to my notice and should be added to the bibliography published in this magazine in 1936.

TRAIL, J. W. H. 1878. (Entomology of 'Dee')—Mallophaga. Trans. nat. Hist. Soc., Aberdeen, p. 44.

SIMPSON, J. 1882. Trans. Edinb. Nat. Field Club, i, p. 23.

To my bibliography of records of Nycteribiidae (1937) the following reference should be added:—

OLDHAM, C. 1896. *Nycteribia latreillii* in Cheshire. Naturalist, Lond., p. 340.

In my recent paper entitled 'Mammal-fleas and their hosts' (Thompson, 1938), there were two unfortunate errors. The records of *Nosopsyllus fasciatus* (Bosc.) and *Leptopsylla spectabilis* (Roths.) from the Hebridean Vole (*Microtus agrestis exsul* Miller) should refer respectively to the Short-tailed Vole (*Microtus agrestis hirtus* (Bellamy)) and the Scottish Short-tailed Vole (*Microtus agrestis neglectus* (Thompson)). The single record of *Ctenophthalmus agyrtes nobilis* (Roths.) from the Hebridean Vole must be regarded as doubtful.

MALLOPHAGA ON A BIRD'S EGGS.

In 1936 I published a short paper containing a new record of the occurrence of Mallophaga on a bird's egg, together with a summary of the previous records of similar findings. At the beginning of this year I received through the kindness of Mr. C. Wentner-Smith some Mallophaga taken from the 'warm eggs' of *Vanellus vanellus* (L.), Lapwing in Yorkshire, Shipley, 20.v.1937. The material consisted of four females and two males of what I take to be *Menopon lutescens* Nitzsch. The present record is interesting and worthy of note since this is the third occasion upon which this species of louse has been found on the eggs and in the nest of the Lapwing.

THE IDENTITY OF THE MALLOPHAGA OCCURRING IN THE QUILLS OF THE CURLEW.

Waterston (1922) published an interesting account of a species of Mallophaga, which he took to be Piaget's *Colpocephalum patellatum*, occurring in the quills of the Curlew (*Numenius a. arquata* (L.)). During the past few years I have seen numerous examples of this parasite, together with the quills containing the holes made by this parasite. A comparison of the specimens originally recorded by Waterston and my own additional material with Piaget's type material, proves Waterston's statement to be correct. The species has, however, since been removed to another genus and is now known as *Actornithophilus patellatus* (Piaget).

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 ROTHSCHILD, M. (1936.) Novit. zool., xxxix, pp. 270-274, figs. 31-35.
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 WATERSTON, J. (1922.) Ent. Mon. Mag., 3rd ser. viii, pp. 243-244, fig. 1.
 53 Arodene Road,
 London, S.W.2.
 November 14th, 1938.

The Insects of Cambridgeshire.—We are asked to announce that a limited number of copies of the *Zoology of Cambridgeshire*, the major part of which is occupied by the account of the Insecta, are now available. They are reprinted from the 'Victoria County History of Cambridgeshire and the Isle of Ely,' Vol. I, 1938, pp. 77-245. Applications, accompanied by a remittance of £1/1/0, which covers postage, should be made to the Editor, Dr. A. D. Imms, Zoological Laboratory, Cambridge.—Eds

The Victoria County History of Cambridgeshire.—The Zoology of Cambridgeshire, reprinted from Vol. I of the above work, is now available in the form of a separate, and I should be grateful if I might draw the attention of purchasers, whether of the complete volume or of the separate, to an unfortunate omission regarding the authorship of the section on the Lepidoptera (pp. 139—161). The names of the authors of the different sections appear only on the title page, and there I am given as the sole author of the section in question. Actually the contribution was prepared jointly by Mr. H. M. Edelsten and myself, and I much hope owners of the work may be willing to make the necessary corrections in their copies.

I suggest this, not only in justice to a collaborator who did his full share of the work, but even more because Mr. Edelsten's knowledge and experience of the butterflies and moths of fenland are unrivalled, and the fact that he has shared in the authorship of the section will add greatly to its authority in the future. The Victoria County Histories provide for many counties the only guide to the insect fauna available, and anyone who has endeavoured to make scientific use of such records will realise how dependent are subsequent investigators on the judgment of the authors. The proper attribution of authorship is therefore of more than temporary interest. Finally, may I add that the Editor of the Zoological sections (Dr. A. D. Imms) is in no way responsible for the omission of Mr. Edelsten's name.—J. C. F. FRYER, Harpenden : November 22nd 1938.

Trichonyx sulcicollis Reiche in a London park.—While sitting at the side of a bowling-green in the public park here on the evening of June 11th, 1937, the weather being very warm, still and close, I noticed a small beetle crawling amongst ants on one of the large flagstones forming the pavement on which the seats were placed. Although rather unprepared for Coleoptera at the moment, I managed to secure it in the folds of a piece of newspaper, and finding it to be a Pselaphid unknown to me I took it to the Natural History Museum on my next visit, when with Dr. Blair's kind help it was quickly identified as *Trichonyx sulcicollis*, rather an unexpected capture in such surroundings! The ants, which Mr. Donisthorpe informs me are the very common *Lasius niger* Linn., were very numerous about the flags, running in and out

of the cracks between them, and throwing out quantities of the sand on which they are laid, so that I concluded that their nests were underneath. I should add that many individuals of another species of ant, *Myrmica ruginodis*, were also running over the flags a few yards away, but none of these were about the spot where I noticed the beetle, and I should think it more probable that the latter, if it was really living with ants (there is, of course, an element of doubt as to this in the absence of any opportunity of uncovering and examining the nests), had come from a nest of *L. niger*.

On referring to Mr. Donisthorpe's 'Guests of British Ants' (1927), I find that most of the British records of this rare species have been away from ants, and that only two previous instances of any association with them in this country are known. It was found by Douglas and Scott at Lee, Kent, in 1862, with an ant the name of which was not stated, but which Mr. Donisthorpe thinks was probably *Lasius brunneus*, and much more recently, in 1915, by Mr. E. C. Bedwell in the New Forest, when a new species of *Euthia*, as well as several of the *Trichonyx*, were discovered in an old beech-tree in which a species of *Myrmica* was present. On the Continent, where it is regarded as a true myrmecophile, it has been principally found with *L. brunneus*, which Wassmann regards as its usual host, and it has apparently not been recorded there with *L. niger*.

During the past summer I have paid frequent visits to the bowling-green in suitable weather to look for the beetle, but for some reason or other the ants and their casts have been much less numerous than last year, and no further examples of *Trichonyx* have been met with.—F. B. JENNINGS, 152 Silver Street, Upper Edmonton, N.18: October 20th, 1938.

Further notes on variations in the Tarsal Segmentations of Atheta (Coprothassa) sordida Marsh.—In support of the opinion expressed in my notes on this subject in the Ent. Mo. Mag., 1936, pp. 151-3, I now record the capture of another specimen of the above-named beetle with five segments to its left front tarsus instead of four, as in a normal individual. This example was one of a collection of 46 specimens taken in haystack refuse at Wallington, Surrey, in October, 1936. As usual, I mounted the abnormal left and the presumably normal right tarsus side by side in balsam on celluloid, in the manner recommended by Mr. Britten in Mr. Eltringham's *Histological and Illustrated Methods for Entomologists*. I did not publish the matter at the time as I expected to catch more of the abnormal forms in the following spring in the Plymouth district. Unfortunately I have failed to meet with *sordida* since 1936. On referring to my mounted specimen for the purpose of this note, I was not satisfied with its clarification. Accordingly I removed the little cover-glass and improved its appearance, with the result that the right tarsus was found to have three joints only, and, moreover, that the inner claw was dilated at the base into an angular tooth, occupying about a half of the claw itself. Reference to numbers 2, 7 and 8 of the diagram in the article mentioned above shows a nodule at the base of the claws (marked by an asterisk to each), and in conjunction with this the tooth now described is at least of interest. The segments of this right tarsus are well formed and very distinct, whereas those of the five-segmented one are all cylindrical in shape, and the joints therefore somewhat difficult to see. The difference in the length of the two tarsi is very manifest, and a camera sketch shows it to be in the ratio of 57 to 68. I exclude the claws in this measurement as those of the left tarsus were lost in the clarification.—J. H. KEYS, 9 Hillside Avenue, Mutley, Plymouth: December 12th, 1938.

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ERRATA.

Page 19, line 31, for '*Doronectes*' read '*Deronectes*.'

" 22, " 17, " '*Hies.*' read '*Kies.*'

" 40, " 14, " '*firsh*' read '*fish.*'

" 100, " 12, " '*Jamaica*' read '*Trinidad.*'

" 112, column 3 from right, for '*juscatus*' read '*fasciatus.*'

" 118, line 12 from bottom, for '*versicolora*' read '*versicolore.*'

" 120, " 8 " " '*versicolora*' read '*versicolor.*'

" 183, " 17 " " '*Mincropalpus*' read '*Micropalpus.*'

" 248, " 15, for '*Agabus*' read '*Ilybius.*'

EXPLANATION OF PLATES.

- Plate I. Vertical section of Bromeliad, *Brocchinia micrantha* (Baker).
,, II. General view of growing *Brocchinia micrantha* (Baker) (pp. 198—200).
,, III. Windsor Great Park, September 15th, 1928. Mr. H. St. J. Donisthorpe
and group in front of the ' Watch Oak ' (p. 270).

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